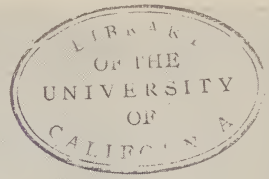


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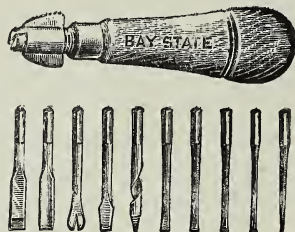


Cleanings in Bee Culture



Bay State Awl and Tool Set

Ten Tools



Tempered and polished tool steel blades; cutting tools sharpened. Polished hollow maple handle, with screw cap to contain blades. Polished steel screw chuck, jaws, and ferrule.

Length of Blade $2\frac{5}{8}$ inches; length of handle, $5\frac{3}{4}$ inches; total length with blade attached, $7\frac{3}{4}$ inches. Diameter at chuck, 11-16 inch.

This is just the kind of a set to take with one for emergencies when it is inconvenient to carry so many tools, as they all fit in the handle, and the tool in that way occupies little space but can readily be converted into ten different tools. Nothing handier for a pocket kit.

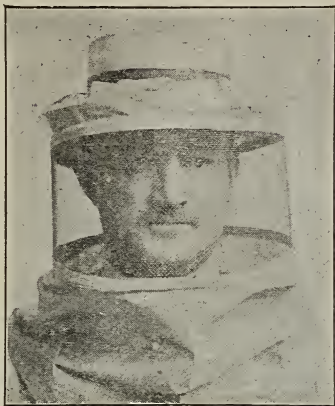
Bay State Awl and Tool Set

a Premium for NEW Subscriptions to "Gleanings"

Send us THREE NEW SUBSCRIPTIONS TO GLEANINGS
for six months each (25 cts. each), and one of these
Awl and Tool Sets will be mailed to you
postpaid as premium.

Canadian postage 15 cts. extra for each subscription.

Gleanings in Bee Culture, Medina, Ohio



THE IDEAL BEE-VEIL

Oftentimes when out in the yard working with the bees one stoops over to pick out a frame, and, as usual, bees keep buzzing around his head, watching for a chance to sting. The cloth veil which is often used sticks to the face when one bends over, and gives the bees an opportunity to sting. The IDEAL BEE-VEIL is constructed of cloth of wire, there being a cord at the top of the veil used to pull the cloth around the crown of the hat. The lower part also has a cord which fastens around the waist. The part on the IDEAL veil does not strike the face, and prevents the bees from stinging. It can be readily seen that a veil of this kind has the cloth veil far outdistanced for comfort and utility. Sparks from the smoker do not burn holes in the IDEALS as in the netting veil.

The veil is manufactured by us, and is recognized by the best and largest beekeepers as the most practical veil on the market.

Red Catalog, postpaid. "Simplified Beekeeping," postpaid. Dealers Everywhere.

W. T. Falconer Mfg. Co. . . . Falconer, N. Y.

Where the good beehives come from.

HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

GRADING RULES OF THE COLORADO HONEY-PRODUCERS' ASSOCIATION, DENVER, COL.,
FEBRUARY 6, 1915.

COMB HONEY

FANCY.—Sections to be well filled, combs firmly attached on all sides and evenly capped except the outside row next to the wood. Honey, comb, and capping white, or slightly off color; combs not projecting beyond the wood; sections to be well cleaned. No section in this grade to weigh less than 12½ oz. net or 13½ gross. The top of each section in this grade must be stamped, "Net weight not less than 12½ oz."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER ONE.—Sections to be well filled, combs firmly attached, not projecting beyond the wood, and entirely capped except the outside row next to the wood. Honey, comb, and cappings from white to light amber in color; sections to be well cleaned. No section in this grade to weigh less than 11 oz.

net or 12 oz. gross. The top of each section in this grade must be stamped, "Net weight not less than 11 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER TWO.—This grade is composed of sections that are entirely capped except row next to the wood, weighing not less than 10 oz. net or 11 oz. gross; also of such sections as weigh 11 oz. net or 12 oz. gross, or more, and have not more than 50 uncapped cells all together, which must be filled with honey; honey, comb, and cappings from white to amber in color; sections to be well cleaned. The top of each section in this grade must be stamped, "Net weight not less than 10 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

Comb honey that is not permitted in shipping grades

Honey packed in second-hand cases.

Honey in badly stained or mildewed sections.

Honey showing signs of granulation.

Leaking, injured, or patched-up sections.

Sections containing honey-dew.

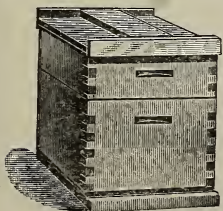
Sections with more than 50 uncapped cells, or a less number of empty cells.

Sections weighing less than the minimum weight. All such honey should be disposed of in the home market.

EXTRACTED HONEY

This must be thoroly ripened, weighing not less than 12 pounds per gallon. It must be well strained, and packed in new cans; sixty pounds shall be packed in each five-gallon can, and the top of each five-gallon can shall be stamped or labeled, "Net weight not less than 60 lbs."

Extracted honey is classed as white, light amber, and amber. The letters "W," "L A," "A" should be used in designating color, and these letters should be stamped on top of each can. Extracted honey for shipping must be packed in new substantial cases of proper size.



Early-order Discounts will
Pay You to Buy Bee Supplies Now

30 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. . . . Write for our illustrated catalog and discounts today.

Leahy Mfg. Co., 95 Sixth St., Higginsville, Missouri

STRAINED HONEY

This must be well ripened, weighing not less than 12 pounds per gallon. It must be well strained; and, if packed in five-gallon cans, each can shall contain sixty pounds. The top of each five-gallon can shall be stamped and labeled, "Net weight not less than 60 lbs." Bright clean cans that previously contained honey may be used for strained honey.

Honey not permitted in shipping grades.

Extracted honey packed in second-hand cans.

Unripe or fermenting honey weighing less than 12 lbs. per gallon.

Honey contaminated by excessive use of smoke.

Honey contaminated by honey-dew.

Honey not properly strained.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING-RULES
Adopted at Cincinnati, Feb. 1913.

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH

1. *Extra Fancy*.—Sections to be evenly filled, combs firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than six unsealed cells on either side, exclusive of the outside row.

3. *No. 1*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2*.—Combs not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT.

1. *Heavy*.—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium*.—No section designated as medium to weigh less than twelve ounces.

3. *Light*.—No section designated as light to weigh less than ten ounces.

In describing honey three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy, white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

CHICAGO.—The market is simply stagnant on all kinds of honey. Prices are without material change. Beeswax is selling at 28 to 30 cts. per lb.

Chicago, Jan. 4.

R. A. BURNETT & Co.

ST. LOUIS.—Our honey market lately has been very dull and slow, but stocks quite ample for small demand. We are now quoting white comb honey in 24 sections at \$3.25 to \$3.50; amber from \$2.50 to \$3.00; dark and inferior, less; extracted honey in 60-lb. cans, from 5 to 8½¢; in barrels, from 5 to 6, according to quality. Beeswax, 28 for pure; impure and inferior, less.

St. Louis, Jan 6. R. HARTMANN PRODUCE CO.

ZANESVILLE.—The demand for honey is about normal for the season. Prices remain as per previous quotations. Choice to fancy grades sell in single-case lots at \$4.00 to \$4.25; lighter weight and inferior grades correspondingly lower, with usual discount to the jobbing trade. Best grades of extracted are selling at 9 to 11, according to quantity. Twenty-eight cents cash, thirty in trade are ruling prices for wax as received first-hand from producers.

Zanesville, Jan. 6.

E. W. PEIRCE.

INDIANAPOLIS.—The demand for honey, both comb and extracted, has not been very brisk since our last report, but this we believe is due mostly to the holiday season. We are being offered honey by many producers, and they seem very anxious to sell. No. 1 choice comb is selling at \$4.00 per case; No. 2 at \$3.50 per case. Extracted of fine quality is bringing 9 to 11. We are paying 28 cts. cash or 30 in trade for good average wax delivered here.

Indianapolis, Jan. 5.

WALTER S. POWDER.

KANSAS CITY.—The supply of both comb and extracted honey is good, but the demand is only fair. We think the mild weather has something to do with the light demand. We quote No. 1 white comb honey, 24-section cases, \$3.15 to \$3.25 per case; No. 2 ditto, \$2.75 to \$3.00; No. 1 amber ditto, \$3.00 to \$3.10; No. 2 ditto, \$2.50 to \$3.00; white extracted, per pound, 7½ to 8; amber ditto, 5½ to 7; No. 1 beeswax, 28; No. 2, 25.

C. C. CLEMONS PRODUCE CO.

Kansas City, Jan. 5.

We are in the Market to buy both comb and extracted honey. Write us what you have to offer, naming your best prices delivered. Every time an interesting price is named us, we buy, and remit the day shipment arrives.

Ship Us Your Old Comb We render it into wax, and pay market price.

The Fred W. Muth Co., 204 Walnut Street, Cincinnati, Ohio
"The Busy Bee Men"

NOW IS THE TIME

To order your supplies, and thus have every thing in readiness for the spring besides saving 3 per cent

We carry a full line of Root's Goods at all times, and are always prepared to fill any and all orders on short notice.

Hives, supers, frames, sections, comb foundation, section-presses, foundation-fasteners, queen-excluders, queen and drone traps, swarm-catchers, feeders, honey and wax extractors, capping-melters, honey-knives, honey-tanks, honey-packages, shipping-cases, bee-escapes, bee-veils, bee-gloves, bee-brushes, smokers—in short, everything the bee-keeper requires for the proper conduct of an apiary.

C. H. W. Weber & Company, Cincinnati, O.

2146 Central Avenue

The Prospect for 1916 is Very Good

It would be wise to be one of the beekeepers who are now ordering supplies for another season; besides, there is a discount for January of 3 per cent and February of 2 per cent. Send us a list of goods required and we shall be glad to quote you prices if you have no catalog. Catalog will be sent only on request. Our stock for season of 1916 is now here, and we can fill orders pretty promptly. We carry a full line here at Syracuse; and by ordering from here you will save time and freight. Goods will arrive in better condition on short hauls. Better make out a list before you forget it.

F. A. Salisbury, Syracuse, N. Y.

1631 West Genesee Street

Gleanings in Bee Culture

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1916 Catalog sent on request

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DEPOSIT BANK CO.**

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Practice in Patent Office and Courts
Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building
WASHINGTON, D. C.

QUEENS OF QUALITY

The editor of *The Beekeepers' Review* and his sons have 1100 colonies of bees worked for extracted honey. With all those bees working with equal advantage, all having the same care and attention, they have an opportunity unexcelled to ascertain without a reasonable doubt colonies desirable as breeders from a honey-producer's standpoint. Likely, never in the history of beekeeping was there a better opportunity to test out the honey-getting strain of bees than this. Think of it, 1100 colonies with equal show, and a dozen of those colonies storing 250 to 275 pounds of surplus honey this last poor season (with us), while the average of the entire 1100 being not more than 40 pounds per colony. We have sent two of our best breeding queens (their colonies producing 275 pounds surplus each, during the season of 1915) to John M. Davis, and two to Ben C. Davis, both of Spring Hill, Tenn., and they will breed queens for the *Review* during the season of 1916 from those four superior honey-gathering breeding queens. Those young queens will be mated with their thoroughbred drones. Our stock is of the three-banded strain of Italians; also that of John M. Davis; while Ben C. Davis breeds that disease-resisting strain of goldens that is becoming so popular.

By this time you are likely thinking that your strain of bees may be improved some by the addition of this superior strain of *Review* queens, and how you can secure one or more of those superior honey-gathering queens as a breeder. We will tell you. They will be sold to none except *Review* subscribers. If you are a paid-in-advance subscriber to the *Review* for 1916, we will mail you one of the daughters of those famous queens in June for a dollar. If not a subscriber to the *Review* for 1916, send \$1.75 for a year's subscription to the *Review*, and one of those famous queens. These queens are well worth two dollars each compared to the price usually charged for ordinary queens, but we are not trying to make money out of this proposition, only we are anxious to have every subscriber of *GLEANINGS* a subscriber to the *Review*, and we are taking this way to accomplish the object. A few of the very first orders for queens that we receive can be mailed in May, but the majority will not be mailed until June. Orders filled in rotation. Have your order booked early and avoid disappointment. Address with remittance

THE BEEKEEPERS' REVIEW, Northstar, Michigan.

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Constipation causes much unnecessary discomfort—discomfort easy to relieve by slight changes in daily habits. This Dr. J. H. Kellogg proves in his latest book—"Colon Hygiene"—in which he tells you of the common causes of constipation and how they may be removed by a little careful attention to daily habits in your home and wholly without drugs. Dr. Kellogg speaks with authority because, for nearly forty years, he has been Superintendent of the Battle Creek Sanitarium—an institution which, through its remarkable achievements in relief of human suffering, has earned a reputation as one of the greatest scientific medical institutions in the world. Here Dr. Kellogg has had opportunity to observe, treat, and prescribe for thousands of cases of indigestion, constipation, and the more serious disorders to which they often lead. Thus, Dr. Kellogg writes from the standpoint of extensive experience—he deals with facts, not theory. What Dr. Kellogg recommends you can depend upon. His book contains nearly 400 pages, with many illustrations, diet tables, and full instructions for exercise, rest, and sleep. Price of the book only \$2 postpaid in the U. S. Order today. You take no risk. If you are not entirely satisfied, return book at once for prompt refund. Send order to

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It is unnecessary to talk here about the type of supplies carried in stock at these two distributing points.

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Our exhibit at the Panama-California Exposition was awarded a grand prize and a gold medal.

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Geo. L. Emerson, Manager, 948 East Second St.

Where the Weed foundation-machines are making perfect non-sag foundation. Send us your wax to be made into foundation. We buy wax too.

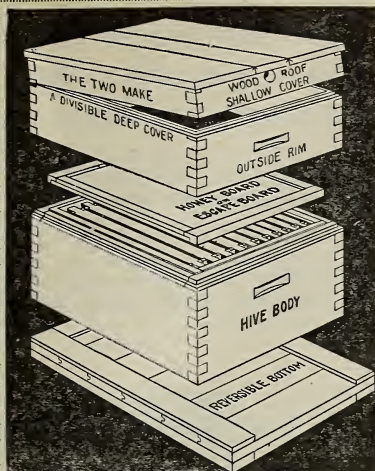
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New machinery for manufacturing hives and frames has been added. Extractors are now shipped "knocked-down" from the factory at Medina.

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245 Mission Street

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Price: \$14.75 for five hives, delivered to any station in the U. S. east of the Mississippi and north of the Ohio Rivers.

Air spaces or packing as you prefer. Seven-eighths material in the outer wall, which means that they will last a lifetime. Used and endorsed as the best hive on the market by many prominent beekeepers of this and other countries.

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ALLEN LATHAM.

Send for catalog and special circulars. We are the bee-hive people. Send us a list of your requirements for 1916 and let us figure with you.

A. G. Woodman Co., Grand Rapids, Mich.

Your BEESWAX
Manufactured into
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on shares. Write for special prices.
SUPERIOR HONEY CO.
Ogden, Utah
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No. 25 screw cap, \$4.60 gross. . . Shipping-cases and cartons.
Amber honey, 7½ cts. pound; light honey, 8½ cts. pound. Catalog free.

I. J. STRINGHAM, 105 PARK PLACE, N. Y.
Apiaries, Glen Cove, L. I.

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Cleanings for 1916	1.00	
One REVIEW HONEY QUEEN	1.00	
Total	\$4.00	

For description of REVIEW QUEEN see another page.
Address with remittance

The Beekeepers' Review, Northstar, Michigan

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Guilford, Vt.

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633 Central Bldg. . . . Los Angeles, Cal.

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of Honey and Wax

Write Us for Prices when in the Market

Candy for WINTER STORES

Why not be sure your bees have enough for winter by giving each colony one or two plates of candy? We have it in large paper plates weighing about two pounds, enough to last a colony three or four weeks. Can be sent by post. Write for prices, also catalog of supplies.

H. H. Jepson, 182 Friend St., Boston, Mass.

BEE SUPPLIES Send your name for new 1916 catalog out in January.
Dept. T, CLEMONS BEE SUPPLY CO.,
128 Grand Ave., Kansas City, Mo.

Equipment purchased during the quiet winter months may be made ready for busy spring and summer months. The early-order discount pays you interest on your money.

"Root Quality" equipment means BEST QUALITY equipment. The Root bee supplies are up to the minute. The most complete line of bee supplies made.

We sell Root's Goods in Michigan. Order from Root catalog, or we will quote on request. January cash discount, 3 per cent; February, 2 per cent. Beeswax wanted.

M. H. Hunt & Son, 510 N. Cedar St., Lansing, Mich.

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We Sell Root's Bee Supplies
---the Goods that Satisfies....

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If you are interested, and it is your intention to order your supplies before goods are really needed, just try placing a trial order here. We are quite sure you will continue with us year after year. Some, of course, never buy supplies till after they are needed. But the men who are most successful are preparing *right now* for next season.

We allow you 30 cents a pound in trade for good average beeswax delivered here.

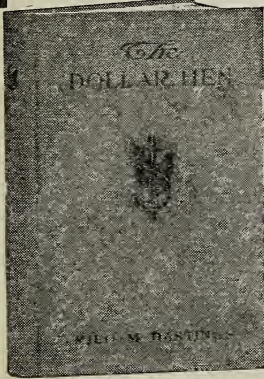
Finest extracted honey in five-gallon cans ready for immediate shipment. Write for quotations.

Walter S. Pouder, Indianapolis, Ind.

873 Massachusetts Avenue

The Dollar Hen

My opinion is that "The Dollar Hen" is not only one of the best books on poultry that we have at the present time, but it is worth nearly as much as a dozen other books. Perhaps this is extreme, but we have very few books that are strictly up to date, and still fewer that pitch right into the superstitions and humbugs scattered thru all our poultry books and journals.—A. I. Root.



This book will be clubbed with GLEANINGS for one year at \$1.35; or, if you have already subscribed a year or more in advance you can have the book for 60 cents.

GLEANINGS
IN
BEE
CULTURE,

Medina,
Ohio

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reads the advertisement of a great railway terminal. "Next door to everything in Beedom" fittingly describes our location. In the bee-supply business, distance is measured, not in miles but in hours and minutes; and the house that gives first service is nearest the beekeeper.

Tho but a short distance from the geographical center of Ohio we are yet so near to West Virginia and Pennsylvania, and so closely connected by transportation lines, that we are truly "next door."

Some idea of our importance as a distributing center may be gained from the fact that more than fifty mails arrive and as many depart daily, and almost a hundred freight and express trains enter and leave the city every twenty-four hours.

Then our location in the city is most accessible. Our office and warerooms are just off the main business thoroughfare, in the heart of the wholesale district, and only a stone's throw from depots, post-office, and the large retail stores. Beekeepers and their friends are earnestly invited to make our store their headquarters when in the city.

The best goods and service justify us in promising our customers the fullest measure of satisfaction.

January cash orders are subject to a special discount of 3 per cent off catalog prices. Clover looks most promising for the coming season, and it is the part of wise foresight to prepare carefully the bees for winter, and anticipate all possible requirements.

E. W. Peirce,

22 So. Third St.

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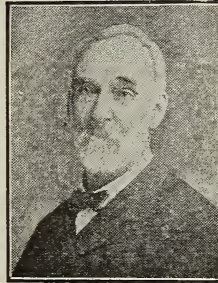
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Medina, Ohio

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GLEANINGS IN BEE CULTURE

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EDITORIAL

Good Wintering at Medina

TODAY, Jan. 12, the bees at Medina are having a splendid flight. The temperature is up to 70, and the bees are flying as if they were out on a gala day in summer. Bees are wintering equally well in double-walled single hives and in the big quadruple winter cases. In some colonies brood-rearing has started. Notwithstanding the bees have been flying strong, scarcely a spot of dysentery can be found on the hives. Indications at the present time point to excellent wintering; and the government weather maps seem to indicate that our locality is no exception.

The Michigan Short Course

AFTER trying for two years to put thru his project of a short course for Michigan beekeepers, Prof. F. Eric Millen, of East Lansing, Mich., has succeeded and now announces a "Beekeepers' Week," March 13 to March 18, inclusive.

This is a new course, and is designed to meet the needs of a large number of beekeepers who have never had an opportunity to become acquainted with the newer and more profitable systems of management.

Seven or eight lectures will be given daily and expert beekeepers, including Mr. Morley Pettit, Provincial Apiarist, Ontario, will address the class. While it will not be possible to cover the whole field of beekeeping the fundamental principals will be thoroughly discussed. There are no fees and no age limit. The women are as welcome as the men. For particulars inquire of the Department of Entomology, East Lansing, Mich.; also Convention Notices elsewhere.

Bee-escapes

In this issue there is some evidence showing the value of the double Porter escape, or two single escapes to a board. It is a little dangerous to put a single escape on a big colony during hot weather. We have

had one disastrous experience, and numerous reports showing that a single exit may become clogged. When bees are confined on a hot day in a super with no means of escape, there is danger, on account of the excessive heat generated, that the combs and honey will be melted down, and the bees smothered.

For these reasons the double-exit escape is coming more and more to the front. It is altogether unlikely that both exits will become clogged at the same time. And even if one should do so, the other opening will release the bees.

Quite a number are now favoring the ventilated escape-board having one or two Porter escapes in connection with the wire screen. The object of this is to provide ventilation, and keep the honey as warm as possible so it will extract more readily. But as E. F. Atwater, in this issue, says, the combs will not be as warm as when the bees themselves are on them. Herein the old method of shaking and brushing combs has a little the advantage.

Honey Bread—Not so you Could Notice it

OUT in Kansas they have a food commissioner who will not tolerate misrepresentation of a food by name or trademark, fanciful or otherwise. Butternut Bread, made in Chicago, when it comes into Kansas has to bear labels expressly stating that butternuts are not used in its manufacture.

Then the commissioner came to the "Honey Bread" people in Kansas City who had to confess that they use no honey in making up the dough. The only thing to do was to admit it on the label or find another name.

The decision of the food commissioner in the case of the Butternut Bread is rather curious, especially as it does not seem that any one would believe that butternuts actually are used in it; but the laughter at his "Honey Bread" decision was due to general

ignorance on the part of the public that honey is often an important ingredient in bread. The commissioner was right.

But then, isn't it to be regretted that honey is not more generally known as a delicious addition to a bread recipe? If it had been, the commissioner's action would not have been almost the national joke that it became.

The United Honey-producers' Association

THIS is an organization to "support a nation-wide system of teaching the food value of honey, and its uses in cooking, in the domestic-science departments of our public schools. It was started in Indiana, with B. F. Kindig, deputy inspector of Indiana, president, and George W. Williams, of Redkey, Ind., its secretary and treasurer. A vice-president will be chosen later from among the members of each state organization. These collectively will make up the national board of control, to determine the policies to be carried out. The dues are \$1.00 a year, plus one cent per colony above the first hundred colonies.

Mr. Williams, the secretary, is editor and owner of the *Booster*, a monthly journal devoted exclusively to the interests of honey-producers, but primarily to boost the price and sale of honey. We have already noticed this paper—see pages 431 and 739. The *Booster* appears to be still boosting, not only to increase the consumption of honey, but to boost the United Honey-producers of America.

It is announced that the new organization will make some of the "old fossils who have been running around in a ring for 25 years open their eyes when they wake up some of these mornings and see the United Honey-producers doing the things that they have been dreaming and talk, talk, talking about for a quarter of a century, and doing it in a way that will make them cuss themselves for not seeing how to do themselves."

It is indeed time that we were doing something besides talking and passing resolutions. The publishers of *GLEANINGS* have on their own initiative started a vigorous campaign of advertising honey. We would not dare to say how much we have expended; but if one knows what it costs to advertise in papers like the *Ladies' Home Journal*, he will know that the figures run clear up into the thousands. We gladly join with the United Honey-producers of America, and sincerely hope that they will succeed in putting honey in every family in the United States. They are going at it

right by getting the food value of honey before the domestic-science departments of our public schools.

Winter Weather up to January 3. How Bees are Wintering

WE have been going over our government maps, which we have been receiving since last spring, and find some rather interesting data concerning the weather over the United States as a whole. In our locality the winter started in rather early. We should have preferred to have two weeks more of warm weather before packing our bees; but it set in cold along toward the middle of November, and by December 1 it had set in for real winter.

A comparison of the weather maps for the last two months reveals the fact that it has been rather cold in the southern states, while on Dec. 28 10 degrees Fahr. starts north of Lake Huron, in Canada, continues thru Michigan, thru Chicago, to Springfield, Ill., thru Kansas, clear down south as far as Roswell, N. M., a little north of El Paso, and running a little north between Phoenix and Flagstaff, Arizona. Then the line turns sharply to the east, going thru Leadville, passing directly north up into Canada.

On different days it is really surprising to see how cold it has been in some of the southern states. Some of the cold was in a mere pocket covering a very small area in one state. For instance, on Dec. 27 there was a pocket of cold in southwest Utah near Modena. There was another pocket of zero weather around Rapid City. It was down to 30 and even 20 in Texas, and 30 in southern Georgia. On the day following the entire map was changed. The temperature went rapidly upward, but it went down below freezing in northern Florida.

Private letters from Florida indicate that it has been quite cold in that state, and the maps show it. While it has been rather cold in the southern states, the mercury has not been very low relatively in the northern states. In the lake regions, and directly south, it has seldom been lower than 30 degrees, with an occasional pocket of about 20 degrees. Apparently it has not been very cold in Canada; but occasionally we find some zero weather, and a little below zero; but these low marks are at least 100 miles north of Lake Superior.

There has been a large amount of wind; and when the temperature is not so very low there is apt to be a great deal more air stirring than when it is down to about zero. A temperature down to freezing, with a high wind, especially when it goes down to

20, is about as hard on unprotected bees as a zero atmosphere without wind. However, when colonies are well packed and screened by windbreaks, as they always ought to be, these high winds do no particular harm.

Taking the winter over the northern states for two months, so far it has been favorable for bees well packed and screened by windbreaks, but it has been a little hard on bees in single-walled hives out in the open.

It has been noted many times before that when a winter starts in cool and cold rather early as it did this winter that there is no likelihood of there being any severe cold during mid-winter. When, however, the fall is very mild and warm, and the weather continues clear up to Christmas, severe cold is likely to follow, as it did three years ago today, Jan. 5, 1913.

The weather maps also show that the lines of heat and cold this winter pay very little attention to the parallel lines of latitude. While it is true that the cold does not remain long in the southern states, yet this winter, on occasion, it has been just as cold in the extreme southern states as in the northern. For instance, on Jan. 3 it was 30 on the coast of Maine, and the same temperature in Texas, and a few miles north of Phoenix, Arizona; and Yuma, for instance, the hottest spot in the United States, had a temperature as low as 40. In southern Colorado it was down to zero.

According to the map there has not been a large amount of snow. There has been more precipitation in the southern states. There seems, however, to have been considerable snowfall in the regions just north of us in Canada.

The New or Old Bee-disease; Isle of Wight Disease and Bee Paralysis Probably the Same

ELSEWHERE in this issue, page 69, we publish a symposium of reports in response to our request on page 922 for a statement of experience detailing the amount of destruction caused by the new disease, its exact symptoms, and a cure, if any. We have received a good many responses, only a part of which we are able to publish; but those we do give are representative of some of those we do not publish.

The general evidence so far submitted would seem to lead to the belief that the Isle of Wight, or new disease, and the old bee paralysis of bygone days, of Florida and California, are one and the same. The differences, if any, we verily believe, can be

charged to environment and seasonal conditions. Let us compare the symptoms of bee paralysis, and then those of the malady that has shown itself in the Northwest and in the Mississippi Valley.

SYMPTOMS OF BEE PARALYSIS.

The disease seems to be confined mainly to the bees themselves. The first sign of it is a few black shiny bees, often with swollen abdomens, crawling around aimlessly in front of the hive entrances. A few scattered ones will be found in the hive. In the more advanced stages the whole colony seems to be demoralized, and the individuals will apparently be struggling against each other, and tugging at their own bodies, as if in distress. It is very seldom that we find bee paralysis in its advanced stages in the northern states; and when it does occur, not more than one or two colonies having it can be found in the yard.

Some twenty years ago bee paralysis was very destructive in Florida and California. The general symptoms were about the same as we have reported, except that whole apiaries wasted away. But in later years it seems to have worn itself out, both in Florida and California.

A few years ago (1904) we began to hear about the Isle of Wight disease that spread all over England. At the time, it was observed that it was quite like our bee paralysis, and was so reported in GLEANINGS. Last summer we began to get reports of a similar if not the same malady, that was killing bees by the thousands in Oregon and Washington, and we heard of it also down in the Mississippi Valley and in parts of Texas. In some localities it appeared to be very serious. The reported symptoms did not, however, exactly tally with those of bee paralysis. The colonies simply wasted away until the brood began to die. The symptoms in the Northwest part of the country were about the same as in Isle of Wight disease in England. The bees would be seen crawling out in bunches around the entrances of the hives, not always shiny and black, apparently nothing the matter with them except that when they attempted to fly they could not. Some bees would lie on their backs. All of them showed more or less trembling of legs and wings. Some reported that the bees were black and shiny, and others said that they did see it. In this respect the malady in the Northwest was not quite the same as bee paralysis, and the difference between the two diseases could be accounted for by environment because there were several reasons that pointed to the same disease. Let us see what the points of similarity are:

1. As in the case of bee paralysis, so in the disease of the Northwest, some strains of bees are more resistant than others. Sometimes a change of queens brings about relief and often a cure.

2. Finely powdered sulphur sprinkled on the bees brought about relief and cure with the old bee paralysis of Florida and California, and it also seemed to afford relief and cure to the bees affected in the Northwest, down the Mississippi Valley, and in Texas.

3. An excess of moisture seems to favor both bee paralysis and Isle of Wight disease. Either would be more prevalent during a wet season such as we had last summer than during a dry one. In Great Britain, Florida, and in Washington and Oregon, there is an excess of moisture almost every season at certain times of the year. But the humidity is greater some seasons than others, and the virulence of the disease varies with the humidity present.

It will be noticed by the reports in the symposium that the disease apparently disappears when settled dry weather comes on. While we do not know positively, it would seem that a fungus of some sort is the disturbing cause. Whether the bees gather it with the pollen has not been proven. Fungus seems to develop better in a humid atmosphere than in a dry one.

The summer of 1915, especially the fore part of it, was the dampest and wettest we have known for years, and we have heard more of the disease similar to bee paralysis than we have heard before for many years. Moreover, it seems to follow in those portions of the country where there is a great amount of humidity; and it disappears just as soon as dry or settled warm weather comes on. It is quite clearly established that a moist climate, or an occasional wet season favors the propagation of this particular malady, whether we call it Isle of Wight disease or paralysis.

That it is destructive—fearfully so—when the conditions are right, is abundantly proven. One of the remedies is finely powdered sulphur blown over the combs and bees. But the only satisfactory relief is the drying-up of the weather. On this point, perhaps our British cousins may not agree with us; but we doubt very much whether they really know what a dry climate is. What to them would be dry would be only foggy to us.

Another fact seems to be that this new disease apparently wears itself out. After it has had a run for two or three years it will disappear. Twenty years ago Mr. O.

O. Poppleton reported it as very serious. When Dr. Phillips later on sent Mr. Demuth down to investigate he could find nothing of it. When we asked Mr. Poppleton what had become of it he said it had simply disappeared.

We have proved out to our own satisfaction that some strains of bees, especially some around Portland, will resist this Isle of Wight disease or bee paralysis much better than some other strains. The same disease has been rampant in Australia, and it was a very serious trouble there until the beekeepers developed a strain of Italians that were immune to it.

It will be remembered that Mr. F. R. Buehne, of Tooberac, Australia, imported some strains of yellow Italians from America. Everywhere these strains were introduced, bee paralysis broke out and made no end of trouble. He could not hold the disease in check until he had eliminated the imported strains entirely, and went back to his own stock that seemed to be immune.

From all we have so far learned we can draw no positive conclusions, yet the remedy seems to be to introduce strains that are immune to bee paralysis as far as possible in those parts of the country where the disease has held sway or where there is an excess of humidity, and use sulphur. The disease is sometimes imported thru the queen, because years ago there was no such thing as bee paralysis; and when a territory is once cleaned up, humidity alone will not bring it on.

Mr. Poppleton, besides having discovered that powdered sulphur will give relief to an affected colony, also learned that the combs and the bees themselves are not a source of infection to a healthy colony; but the treatment that he found to be the most effective was to form as many nuclei from strong healthy stocks as there were colonies to be treated. As soon as the nuclei had young laying queens he gave to each, as fast as possible, one or two frames of old capped brood from each of the paralytic colonies. He continued to give them brood in this way until the brood from affected colonies was used up.

At the present time we are not assuming that any theory we have advanced, to the effect that the two diseases are one and the same, are absolute and final. We desire to get more reports in order that we may make further comparison; but it is our belief, but only a belief, that the slight differences between the Isle of Wight disease and the old-fashioned bee paralysis can be easily explained by environment and the condition of the season.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.



BULK comb honey looks good when those Texas chaps talk about it; but why has it never gone in the North? We might know more about it if some enthusiast who has made it a success in the South should move north and try it on our markets.

"CLOVER pollen seems to be the only pollen which is covered with honey, and the honey sealed over," says G. M. Doolittle, p. 927. That's new to me; but I've no doubt he is correct, as usual, at least for clover regions. But I do know that in pollen left over from the previous year I do not recall that I've ever seen any but dark brown, like clover pollen. I suspect there's more pollen from clover than from all other plants combined; and the other pollens being used as fast as gathered, clover is the only kind left to be sealed.

So much is said about Italians for European foul brood that there is danger a beginner may think all he has to do is to keep Italians and defy the European enemy. Italians have the disease as well as others, only they are a *help* in its treatment. [You are exactly right, Dr. Miller: but the tendency of late among beekeepers is to think that an immune strain of Italians is all that is required. In the first place, no one can know when a strain is immune; and in the second place, when they are immune, additional treatment is necessary.—Ed.]

THE Editor guesses bees go for nectar as far as they can see, p. 965. My guess is smell. No matter how slight the breeze, bees always approach a basswood on the lee side, although they can *see* as well from either side. Then I'm skeptical about their seeing a patch of clover two miles away. [You may be right. One thing in favor of your theory is that an obstruction would shut off an odor-carrying breeze the same as it would shut off a view of the thing itself. The suggestion has been made that the bee has a telescopic sight as well as a microscopic. The small simple eyes may be telescopic, and the compound or big eyes on each side of the head may be for near or close work.—Ed.]

ACCORDING to what you say, Mr. Editor, p. 1011, the average beekeeper of large experience leaves the dummy out of either eight or ten frame hives. Well, as I there said, "I'm not entirely certain it isn't an improvement." Let's figure: With $1\frac{3}{8}$

spacing, and combs $\frac{7}{8}$ thick where occupied with brood there will be $\frac{1}{2}$ inch between combs, and a space of $\frac{13}{16}$ at each side. Accumulation of glue will in time take up $\frac{1}{4}$ inch, as you say, and then the space at each side will be $\frac{11}{16}$. If $\frac{8}{16}$ is the right space for bees between combs, $\frac{11}{16}$ would seem none too much for the outside blanket of bees. I think I'll try leaving out the dummy. How about ten-frame hives $14\frac{1}{4}$ inches wide? When everything is new there will be just $\frac{1}{2}$ inch at each side. With an accumulation of $\frac{1}{4}$ inch of glue that space will be $\frac{3}{8}$, and with more glue it will be still less. Seems that outside space should be more than the inside ones, rather than less.

"I AM satisfied that fifty degrees is too high a temperature for successful wintering," converses Doolittle, p. 1015. Likely true in most cellars, where the air is close. But it doesn't seem to do much harm in my cellar, where the door is more or less open, and air about as pure as outdoors. At any rate, the temperature often stands at 50 or more, and the bees winter well. I wonder if purity of air isn't more important than temperature. [This question of temperature, as you say, is one that is largely dependent on the amount of fresh air. When there is no ventilation, or but very little, the nearer the thermometer shows 45 Fahr. the better. But with sufficient ventilation the temperature may go up to 50 or even higher without any serious results. In our best indoor wintering-cellar the temperature ranges from 45 to 65—most of the time about 50. We have a dry cellar with a large amount of ventilation. The bees in this cellar would scarcely fly out on the cellar bottom; and on Feb. 15 we were often able to go across the floor without stepping on a bee.]

If anything we prefer a temperature of 50, and ventilation, to a temperature of 40 to 45 with *little* ventilation. We have proved, to our own satisfaction at least, that with a perfectly pure air the temperature may go up to 60 and stay there for days; but, of course, we prefer it about 50. At 50 to 55 the bees begin breeding. This does no harm toward the latter part of winter, but it is too much of a good thing during the fore part or middle of winter. We have looked into a good many bee-cellars; and the conditions we have found all over the North are borne out by our own experience in our own cellar with plenty of ventilation.—Ed.]

J. E. Crane

SIFTINGS

Middlebury, Vt.



Bees were flying freely about here as late as Nov. 28, and even working on fall-blooming dandelions.

It seems to me I never heard so much piping or quaking of queens as I have this fall.

On page 986, Dec. 1, first column, the strange statement is made that, if a colony of bees has European foul brood, it should "be broken up or *disturbed*." *Destroyed* would sound better.

Most of our bees are being wintered, as usual, out of doors. But we put 108 colonies in the cellar Nov. 30 and Dec. 1. The temperature since they were put in has ranged at 50 degrees, and bees are as quiet as one could ask.

Directions are given, page 739, Sept. 15, as to where to set bees in a city lot so as not to cause trouble. This is well; but it is equally important to be careful what kind of bees you set out in a city lot. The average black colony will make ten times the trouble an average Italian colony will. Italian bees rarely molest unless molested.

Mr. Byer inquires, page 970, Dec. 1, if clover out of season yields much honey. That has been our experience this year. It was also true fifty years ago this season. Moses Quinby stated, more than fifty years ago, that in some years it would yield nearly all summer, but as a rule neither white nor alsike clover seems to yield much honey after July.

In reply to Dr. Miller's question, page 789, Oct. 1, I will say that when our bees have sections filled with foundation within $\frac{1}{4}$ inch of the bottom, and on a good colony, and honey coming in freely, we have little trouble about the combs being built down to the bottom; but without these conditions foundation fastened to the bottom appeared to be gnawed away, and not as well secured as we had expected.

The statement is made, page 797, Oct. 1, that "just as water goes direct into the blood, so does honey, leaving no residue. It is assimilated at once, and changed to energy." I believe this fact of vastly greater

importance than we have been accustomed to think. Dr. Miller calls attention to this on page 800. If, when wearied or exhausted from any cause, we take a tablespoonful of honey dissolved in a cup of warm water, we may find ourselves in much better condition later than if we were to take solid food.

I went out a few weeks ago with my right-hand man to look over a hundred colonies of bees. Suspicious that robbing might develop, he brought along a hand sprayer and a little kerosene. Sure enough, we had fairly got started when robbing began. A little spray of kerosene soon put the robbers to flight; and by the use of it, spraying a few hives ahead of where we were at work we were able to work with as little trouble from robbers as in midsummer when honey is most abundant. It is better than carbolic acid—cheaper, and less trouble—best thing I ever tried.

That bulletin No. 695, "The Fundamental Principles of Good Wintering," by Dr. E. F. Phillips, is sound and timely, both as to packing, protection from wind, and strength of colonies. But where little honey is gathered after July we have many colonies that are not strong. What about them? Shall we break them up or unite them that all may be strong? We have found that such winter very well if the brood-chamber is reduced to three, four, or five combs, and well packed, notwithstanding the severity of our northern New England winters. A small room does not require as large a stove to keep it warm as a large one.

Dr. Miller inquires, page 835, Oct. 15, how many swarms I lose by running in virgin queens to full colonies. Well, doctor, "I don't know." We sometimes lose a swarm when a young queen is given a full colony, but I believe not nearly so often as where a queen-cell is given them, or one is left in a hive after it has cast a swarm. We run these virgins in mostly to hives that have prepared to swarm, and from which we have removed the old queen; and the secret of success seems to be to introduce a virgin just after the swarming fever has subsided, or in two weeks from the time they would naturally have swarmed if left to themselves. If much earlier they may swarm; and if very much later they may not accept such a queen.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas



VALUES IN STORE FOR 1916.

We are promised a lot of good things in GLEANINGS during the current year, with special numbers on special topics. Just such treats as the special numbers have proven to be in the past are enjoyed by the readers. This is shown by the appreciation of them so heartily expressed in favor of each special issue that has been published. And we cannot but hope that the forthcoming numbers will be better than ever. Even those beekeepers who are more successful in any one or all of the subjects to be treated during this year, who are progressive enough to realize that one never gets too old to learn, welcome them. The less experienced should not fail to get them.

THE DAY OF THE SPECIALIST.

Just as in many other lines of work and business the day of the specialist beekeeper is coming. It absolutely must come before beekeeping will be put on a sound business basis. The trouble at the present time is that there are too many beekeepers of the smaller type who are a detriment to the industry. We have long heard of the great harm they do in marketing their product at ruinously low prices, and too often offering honey of such inferior quality. Both of these alone are detrimental.

Some of our larger producers have had to suffer considerably as a consequence of the operations of these "one-horse beekeepers," as they are commonly termed. The lower prices set by them affect the larger producer quite materially when the difference of even one cent a pound less on a large output may mean a loss of the profits over cost of production. A difference of two cents a pound on an output of 50,000 pounds of honey means a loss of the neat little sum of \$1000, otherwise a nice little income. Even half that sum, occasioned by a difference of only one cent a pound, may mean the loss of what might have been the actual income for the year.

Here in Texas at the present time, as for a number of years, we are handicapped by those beekeepers who produce a lot of honey and lack the ability to market it properly. The result is that they keep the honey on hand a long time. It granulates more or less, and they begin to offer it at a ridiculously low price. Then it arrives in granulated condition and proves a drug on the market, the dealer not buying any better

honey until he has eventually gotten rid of "the stuff I have on hand." This state of affairs is especially bad with a product like bulk comb honey.

But there is no reason why this should give any ground for objection to the production of this commodity, even for the winter and following spring trade; for we have certainly solved that problem. Even at this time of the year we are filling orders for bulk comb honey; and from the repeat orders we get every week or so from a large number of our customers we have proof enough that it sells like "hot cakes." But we are equipped to pack the beautiful white comb honey in the containers and fill up with properly heated extracted honey, as we get orders for it. This enables us to get out an absolutely fresh "pack" that appeals to the customer, and of which there is nothing nicer during the cold-weather months. That is the reason for its ready sale and the cause of the many repeated orders. It is altogether a different product from that sent out by too many of our beekeepers when they happen to get an order which they fill with the partly granulated old pack honey.

This is only one illustration to show the advantage the specialist has over the beekeeper who is not able to equip himself properly to meet these demands. There are quite a number of others. I am rather optimistic in the belief that the day is here when the larger beekeepers will have to equip themselves better, and when the number of smaller producing beekeepers will begin to wane. Of course, this need not necessarily include the small beekeeper who keeps only a few colonies for his own use, and gets perhaps a little honey to sell when the crop is more favorable.

GREAT NEED OF ORGANIZATION.

Have the Texas beekeepers lost interest, or why is it that there is so little stir among them of late years? There was a time when we boasted of eight beekeepers' associations of considerable size, whereas there is not one good-sized beekeepers' association in Texas today. My twelve years' connection as secretary-treasurer of the Texas Beekeepers' Association and similar connections of late years gave me an opportunity to keep in close touch with matters of this kind.

Why has this change come about? Is it not time that we wake up and begin to stir

at least as we used to, if we cannot do better? Is it not much more necessary to take a deeper interest in apicultural matters today than years ago? And is it not time that some of us were making a start in this direction? In my conversations recently with other beekeepers I found that even the most common subjects of the day could not be discussed because of the fact that "the other fellow" did not any longer subscribe for any of the bee journals, and consequently had not read the subjects mentioned in any of them. This is a sad state of affairs and needs remedying. It is difficult in this age of wide-awakeness and organized effort to strive alone, each individual for himself. It will not only prove lonesome wandering but expensive in the end.

It is true that our more experienced beekeepers have not fallen away from the usual order of things, and many new ones have embarked along the right lines. I am not casting any reflection on any of them; but I often boil over with enthusiasm when I see the great things that could be accomplished. At the same time, it is just as often that there is a boiling over of just the very opposite of enthusiasm. The possession of either of these will prompt outbursts of the above nature.

It is also true that we have a larger number of county beekeepers' associations than we have ever had before; but their effort is too local in nature, and not far-reaching enough. We need bigger organizations to undertake greater fields of work than we now have; and it is to be hoped that the coming year will bring us better results in this direction.

NEW SIZES OF BULK-COMB-HONEY PACKAGES.

Texas has enjoyed a standard of various sizes of packages for bulk comb honey for many years. The regular two 60-lb. square cans to a case, with eight-inch screw cap openings to the can, headed the list. Next in order came the case of ten 12-lb. friction-top pails, followed by ten 6-lb. pails to a case, and another of twenty 3-lb. cans. Before these became standard sizes for the Texas product there was a large assortment of other sizes, and much confusion. This standardization of packages relieved the situation, and resulted in a uniformity of price lists made out in the order of packages as given above.

During the last two years there has been a demand for our bulk comb honey in the regular sizes of syrup-pails, the 5 and 10 lb. friction-top pails. This demand has increased to such an extent that these sizes

have almost supplanted the standard honey sizes. It was still necessary, however, to carry all sizes in stock in order to be able to fill orders for any of the older sizes as well as the new. This created again the same confusion that previously obtained—too many different sizes of packages necessitating the carrying in stock of a much larger supply of cans than necessary. It also brought about all sorts of combinations of orders, and too frequently delay on account of one or the other size in stock becoming exhausted.

An effort will be made by a number of the foremost beekeepers and honey-dealers to eliminate the unnecessary sizes for the 1916 season. It is a fact that the special sizes of honey-pails of 12 lbs. and 6 lbs. are higher in cost of manufacture in comparison to the 10-lb. and 5-lb. syrup-pails. The former require a special size of tin in their making, while the latter are a standard for syrups, made in enormous quantities; and if adopted for honey in place of the former they can be obtained at much less cost to the beekeeper.

Recently I took the matter up with some of our jobbers who handle enormous quantities of honey. Their immediate answer was in favor of the change. One of these concerns preferred, however, before deciding definitely, to investigate, and consequently dictated a letter to a number of their traveling honey-salesmen as follows:

The following are some of the replies received:

HONEY.

Dear Sir:—With opening of next spring campaign on honey, try to sell everything in 10-lb. and 5-lb. buckets, packed, say, 6/10 and 12/5 to the case.

Please advise on bottom of this letter if this will be satisfactory to your trade.

SALES DEPARTMENT.

"The 6/10 and 12/5 are the best sellers; will want a few 2/60's."

"In my opinion the above will be much better than the old pack."

"Yes, they prefer it."

"Yes, O. K."

"This will be O. K. I like it better."

"Trade likes these sizes much better."

"I think this will suit the majority of the trade, but believe we should have some 3-lb. pails also."

This information is exceedingly valuable. It comes from men who know how to sell honey, and who know the trade and what it wants. The result will be that the honey-dealers will demand and the producers will have to furnish in the new schedule of sizes. These will undoubtedly be the two 60-lb. square cans to the case; six 10-lb. friction-top, twelve 5-lb. friction-top pails, and possibly the retaining of the twenty 3-lb. cans or the adoption of the smaller 2½-lb. syrup size in their place also.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.



PRESERVING FRAMES OF COMB.

"Having sold quite a share of my bees I have on hand more combs than I am liable to use before August, 1916. I feel that it would be better to preserve these combs than to melt them for wax and then buy foundation to replace them when I want combs again, as most of them are nice and straight. But during the spring and summer months I have had poor success in keeping such combs from the larva of the wax-moth. How may this difficulty be overcome?"

Straight all-worker comb, built true in frames, is of greater value by far than the wax will bring which can be gotten from them, to say nothing about the cost of rendering. Experienced beekeepers think it very profitable to purchase comb foundation at the rate of ten cents for enough to fill a Langstroth frame, besides the cost of transporting it and the labor of putting it into the frames. So I have considered such L. frames of comb worth at least twelve cents each. But the wax that can be gotten from such a comb will not bring, as a rule, more than five or six cents. Therefore I have always made it a point to preserve all the spare combs I had for future use.

Combs on which the bees die during winter and early spring can be kept by placing them over strong colonies during the latter part of May and June, so that the bees, but not the queen, can have access to them. In this way they can be kept for any increase that may be desired, and used for colonies set apart for extracted honey. This plan has also an advantage by way of keeping down the swarming fever liable to occur with strong colonies too early, and will more often than otherwise stop all swarming entirely, if these combs are allowed to remain till the surplus flow of nectar from clover is fully begun and the sections on.

Another effective way is to hang the combs up to the light and air with a space of $1\frac{1}{2}$ to 2 inches between them. For convenience in practicing this plan, when I built my shop and honey-room I placed the joists overhead so as to admit the top-bar of a frame crosswise, then by nailing common lath near the lower edge of neighboring joists, each space made a convenient place for keeping all frames of comb not occupied by the bees, the ends of the top-bars or arms resting on the lath. However, with combs not toughened with the cocoons

of many generations of brood, or where the brood has not reached parts of the comb near the upper corners of the frames, the light seems to have a deteriorating effect upon the wax, causing it to become brittle and crumble when thus left more than a season or two.

Where it is desired to keep combs for an indefinite period I have found the following to be the best way: Exposed to cold in which the mercury touches zero or below, everything of the wax-moth nature has to succumb and die. Therefore, if the mature female moth can be kept from such combs ever afterward they will be in perfect condition, even should ten or fifteen years elapse. After the combs have been thus frozen, lay two thicknesses of newspaper upon a level and out-of-the-way place on the floor of any building, setting a hive of these combs thereon; and after covering the hive with two thicknesses of the paper, put another hive of combs covered with paper on that, and so continue the operation until the pile is of the desired height, when the top hive should be protected with paper and a close-fitting cover. As these combs are packed close together and so tightly enclosed, they must be reasonably dry, and put away only in a dry place.

It is important, also, that they be not allowed to stay in any place after the zero freezing (and warm weather comes on before they are packed) where the millers have an opportunity to deposit their eggs on them. As all of our older beekeepers know, the female moth or miller which produces the eggs from which the larvæ hatch is furnished with a long ovipositor which she can insert in almost any crack or small opening—something which she can very easily find between almost any two hives which have been used for a little when one is set upon another. I would not say that these two thicknesses of paper close every crack or cranny, but for some reason the miller seems to shun them.

Whether the paper is repulsive, or because the paper extending outward from the hives all around two inches or so does not allow her to take a position to use her ovipositor, thin paper seems proof against her eggs. Tarred roofing-paper might be a certain insurance that, should there be any warping, or from any other unforeseen cause, worms should get in any one hive, they would be impeded from spreading to other hives in either direction.

GENERAL CORRESPONDENCE

WINTERING BEES IN A QUADRUPLE WINTER CASE AT MEDINA

BY E. R. ROOT

In our issue for Jan. 1, a year ago, we showed a method of packing four colonies in a case that we were using. This year we have made some changes, making the case larger and deeper, and at the same time providing a larger housing from the entrance of the hive to the outside of the case. See front cover design. Instead of a four-inch packing around the hive we have

The space occupied by four ten-frame dovetailed hives is $32\frac{1}{2}$ by 40. In the matter of the depth of the cases we decided to make it so we could put in two-story colonies if necessary. The depth, 25 inches, would not leave room for packing on top of double-deckers; but few such were packed. In a few instances where colonies were so strong we could not very well crowd them

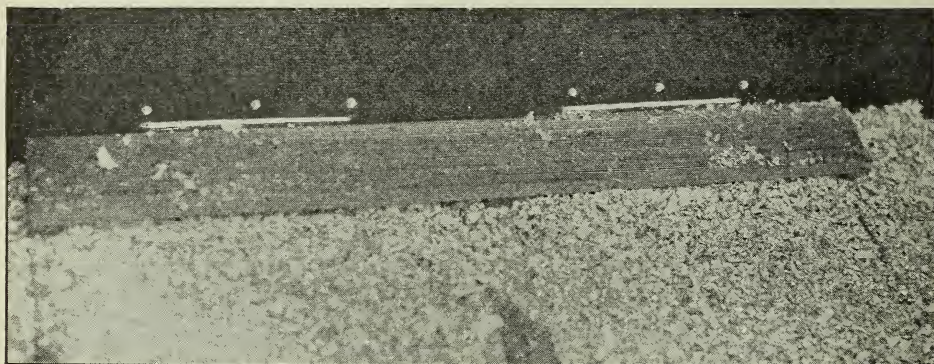


FIG. 1.—The bottom of the winter case covered with three inches of planer-shavings. Note the entrance slots and the three $\frac{3}{8}$ -inch auger-holes just above.

now six inches. Dr. Phillips, from experiments at Washington, found that with any thing less than six inches of packing there would be a radiation of heat from the cluster; so we made our cases large enough so that the inside dimensions are 45 x 52 x 25 inches deep.

down into one story, we decided to try these colonies alongside of single-story ones in the same case. This room for an extra story leaves a space of 9 inches on top of a single story of packing, and this is about right.

In deciding on the amount of packing we consulted Dr. Phillips; and it is his opinion



FIG. 2.—The housing inside of the winter case that connects the entrance of the hives with the entrances of the case. Note that the space is large to prevent clogging with dead bees.



FIG. 3.—Looking on the entrances of two hives in one of the packing-cases. In the picture the hives are shown with the three-eighths side of the bottom up. It was our intention to put the deeper side ($\frac{3}{8}$ inch) up, to give more room for the accumulation of dead bees under the frames. There were a few hives packed with the narrow entrance, and our artist happened to get one of these groups.

that it does no harm to err on the side of getting too much. Six inches around the hives, eight to ten on top, and three or four under, would make a case that would give sufficient packing for most localities, altho he was free to say that in more northern locations, especially Canada, six inches might not be enough. But in the colder climates there is usually plenty of snow; and snow packed around the hives makes a good insulator providing the entrances are not closed by ice.

In order to provide packing under the hives, and to prevent the entrances from getting out of alignment with the openings in the sides of the cases, some cleats or supports must be provided of sufficient height to provide the amount of packing. Last year we used only $2\frac{1}{2}$ inches; but this year we are using 3 inches. In Figs. 1 and 2 can be seen the supports or parallel cleats that run lengthwise of the bottom-board or floor of the large packing-case. On these the hives rest, and also the board reaching from the projection of the bottom-board to the slots forming the entrances of the case itself. Over this board that closes the gap between the bottom-board extension and the outside entrance is placed a housing, so constructed that it fits the bottom-board projections, making a space of two inches deep. We made the space deeper this year to provide for the accumulation of dead bees that would otherwise close the space entirely. Just above the horizontal slot of the winter case will be seen three $\frac{3}{8}$ auger-holes—see Fig. 1. The purpose of these is to afford entrances and ventilation in case the lower horizontal slot is closed by the accumulation of dead bees. This is Mr. Holtermann's idea, and in the light of our

experience last winter we believe it to be good; in fact, it might be the means of saving not one but many good colonies.

In Fig. 3 we are looking down on the fronts of a pair of hives with the bottom-boards abutting up against the floor that reaches to the front of the case. This picture was taken before the roof or horizontal part covering the runway from hive to case was put in place.

The spaces over the entrances must be very carefully and completely closed so the packing material will not filter down and close up the entranceway from the hive proper to the entrance of the case itself.

In Fig. 4 we show a view of the floor before cleats were put in position.

In Fig. 5 we show four hives placed end to end and side by side, as we placed them last year on the floor of the case, and before the sides and ends were put on. Last year we used the supporting-cleats crosswise of the floor. This year we ran them lengthwise as seen in Figs. 1 and 2. The latter arrangement is an improvement in that it keeps the runways between the hives

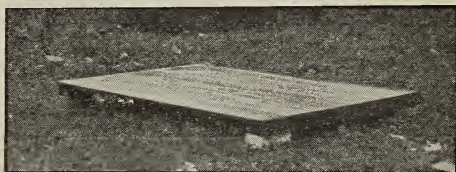


FIG. 4.—Floor for four-hive winter case.

and the ends of the case in better alignment. Last winter we had some trouble with the outside entrances not matching with the inclosed housing to the entrances

of the hives. This ing the cleats run year we have provided against this by mak-lengthwise, and by providing stops or cleats nailed on the bottom inside edge of the rim or case itself. These projections rest on the bottom or floor so that the case itself will not slip down, bringing the outer entrances out of alignment with the inside.

In Fig. 5 will be seen a bale of pine shavings. These can be secured, where one has neglected to gather together a lot of dry leaves, at about 25 cents a bale at a livery stable. It takes about a bale and a half to pack four hives. The expense is not great, because the shavings can be used over and over again, winter after winter.

Our winter case is made so we can take it apart in panels and pack it in the flat to

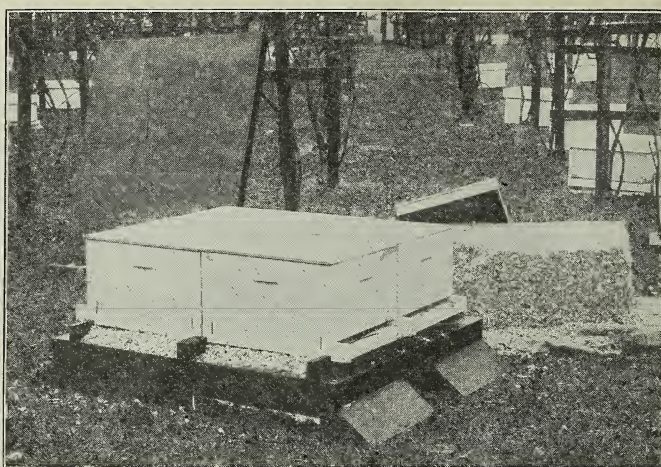


FIG. 5.—The four hives in position, the regular covers removed, leaving only the super covers, so that the hives may be close together.
(This picture shows our former construction.)

shavings back in the case, and then places the case at the outer edge of the yard, to stay there for the season. The four hives removed are put back in the same position, but ten or twelve inches apart to afford convenience in handling the bees during the summer. Mr. Holtermann says that where

one takes down his cases every season he loses his packing material and enormously increases the labor of packing and unpacking; and there is no reason why one should take down the cases unless he desires to remove them to an out-yard. The idea of winter cases is to keep them in one place, year in and year out, using them as a sort of windbreak around the apiary during summer.

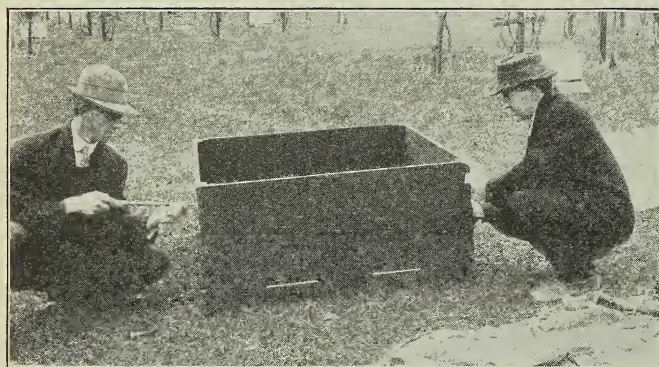


FIG. 6.—An automatic screwdriver for putting in the screws at the corners of the case.

save room; but we prefer to put it together with common wood screws as shown in Fig. 6, with the idea of leaving them together year in and year out at the yard where they are used.

It is Mr. Holtermann's plan to leave these cases assembled. In unpacking he removes the cover, turning it upside down. He shovels the shavings on top on to the cover, lifts the four hives off, piles the

In the front cover picture there are shown nearly fifty packing cases of the Holtermann type. At three of our outyards there were no windbreaks, and as protection from wind is very important—as much so as packing—we decided to haul the bees home and pack at the home yard where we have ample windbreaks in the form of factory buildings and evergreens. We consider a good windbreak next to packing.

EUROPEAN AND AMERICAN FOUL BROOD

Their Differences, History, and Methods of Treatment

BY OREL L. HERSHISER

Continued from page 12 last issue.

A few historical facts may be of interest as a means of comparing the description and treatment of foul-brood diseases, given and practiced by investigators and experimenters of 35 to 50 years ago, with that of recent times.

Dr. Dzierzon records in the English edition of his work, "Rational Beekeeping," this prefatory statement in reference to foul brood: "Since the appearance of the first edition . . . we have further been successful in discovering the nature and the cause of foul brood . . . and almost simultaneously have discovered an infallible cure for it in salicylic acid." Salicylic acid as a remedy for foul brood was first brought to public notice in the papers communicated to the meetings of German beekeepers at Strasburg and Breslau, and published in the last numbers of the *Eichstadt Bienenzeitung*, the organ of the German beekeepers for 1875 and 1876.

As the salicylic-acid treatment seems to have been recommended subsequent to the time when the treatments by dequeening, decombing, and driving of the bees into a new hive were known; and as Dr. Dzierzon states that, since the appearance of his first edition of Rational Beekeeping, they had discovered the nature, cause, and treatment, with salicylic acid, of foul brood, we may reasonably place the discovery of such treatments by dequeening, decombing, and driving the bees into new hives at a period subsequent to 1861, the date of the appearance of Rational Beekeeping, and prior to 1875, when the salicylic-acid treatment was first brought to public notice.

DR. DZIERZON'S DESCRIPTION AND TREATMENT OF FOUL BROOD.

"An infallible symptom of the presence of foul brood is the discovery of dead, dried-up, shriveled larvæ or nymphs in separate cells among healthy brood. These dead larvæ have passed into a pap-like or tough mass, and later on into a grayish-brown or quite black crust on the floor of the lower surface of the cells. If the majority of the cells are in that condition the infection took place some time ago, and the evil has already become very great. Because a stock with foul brood generally ventilates considerably, the evil may be recognized in hives with immovable combs by an unpleasant smell proceeding from the entrance. The smell is similar to that of putrid glue

or meat. As the bees take the trouble to bring out separate larvæ that have not yet entirely rotted, such will be found sometimes on the floor of the hives affected. The bees take the trouble partially to remove to the outside the blackish-brown crust forming finally from the rotten matter. There are, therefore, found on the floor a dark-colored dust and entire skins torn off, which, when rubbed down between the fingers, give off the same unpleasant smell. In spring, when other stocks are already diligently building, the foul-broody do not generally make any preparation for it; at most they will do so only when they are fairly strong, and unusually good pasture sets in. If the combs are examined, the sealed brood is never found *en masse*, but standing in isolated, irregular patches. To be thoroly satisfied, a piece of brood-comb must be cut or torn out; and if it shows cells with the matter described above, foul brood is certainly present.

FOUL BROOD IS OF TWO KINDS.

"There is one kind that is mild and curable, and another kind malignant and incurable. Both kinds are, however, contagious.

"The curable occurs in this way: More of the larvæ die still unsealed, while they are still curled up at the bottom of the cell, rotting and drying up to a gray crust that may be removed with tolerable ease. The brood which does not die before sealing mostly attains to perfection, and it is only exceptionally that individual foul-brood cells are met with sealed.*

"This is exactly reversed in the malignant kind of foul brood. In this the larvæ do not generally die before they have raised themselves from the bottom of the cell, have been sealed, and begun to change into nymphs. The rotten matter is, therefore, not found on the cell floor, but on the lower cell wall. It is brownish and tough, and dries up to a firm black crust, both in consequence of the heat prevailing in the hive, and of a small opening bitten in the depressed cover. This matter the bees are not able to remove; and when they are in some strength they can at most get rid of it by entirely biting down the tainted cells and making fresh ones."†

* Here will be noticed what has in recent years been designated as European foul brood.—O. L. H.

† This describes what we now designate as American foul brood.—O. L. H.

TREATMENT OF THE CURABLE KIND AS
DESCRIBED BY DR. DZIERZON.

"To put a stop to the evil immediately, catch the queen without delay as soon as any foul-brood cells have been observed. In spring and early summer she may be advantageously used for making an artificial swarm. If bees are added to her from healthy stocks we may be sure of having a healthy stock; but if bees were given to her out of her own or other foul-broody stocks, the swarm must be left in a transport hive, sieve, or the like, twenty-four to forty-eight hours before it is put into its hive, and the queen must be kept caged here for some days so that brood may not be deposited nor brood-food prepared before the bees have used up all the honey and food taken with them out of their parent stocks, and have expended it in comb-building.

"Because there is now no more brood deposited in the stocks robbed of queens, none can die or go bad; and till a young queen is reared, fertilized, and has begun to lay eggs again, the bees will have gained time, if they are still tolerably strong, to purify the brood-nest completely. They may be assisted in this by cutting the comb so close that the bees are able to cover it thickly. The new generation will then generally thrive quite well, and the stock be brought back to health again. There would be a greater certainty of this if the entire previous comb, as soon as it becomes empty of brood, were cut out, and the entire stock were driven into a new hive."

COMPARISON OF THE DR. DZIERZON, THE
ALEXANDER, AND THE DR. MILLER TREAT-
MENTS OF EUROPEAN FOUL BROOD.

The primary Dr. Dzierzon treatment consists in depriving the colony of its queen and allowing it to rear another requiring 10 to 11 days to hatch and 7 to 10 days more to become fertile and commence laying, leaving the colony without a laying queen for a period of from 17 to 21 days,

during which time the colony will purify the combs and hive of disease.

The Alexander treatment consists in depriving the colony of its queen; nine days thereafter destroying all queen-cells that may be built, or any virgin queens that may have hatched; and on the 20th day after dequeening, and not sooner, giving a ripe queen-cell or virgin just hatched from vigorous stock, leaving the colony without a laying queen for a period of at least 27 days, during which time the colony will purify the combs and hive of disease.

The primary Dr. Miller treatment consists in caging the queen with her colony for a period of 8 to 10 days; then releasing her to her colony, the 8 or 10 days' time being considered sufficient for the colony to purify the combs and hives of disease.

Mr. Alexander increased the time thought necessary to accomplish the cleansing of the combs and hive, over that found necessary by Dr. Dzierzon, by about 10 days; and Dr. Miller decreased that time by about 10 days. It is obvious that the treatment that accomplishes the result sought in the lesser number of days is to be preferred. If it should be established that the disease is inherent in the queen, as has been announced by Messrs. M. G. and C. P. Dadant, then would the Dr. Miller treatment fail unless the confinement of the queen for the 8 or 10 days would also purify her of disease *bacilli*.

To quote again from Dzierzon: "The curable kind (European foul brood) may occur of itself, under certain conditions of ingathering, especially when the bees are working on billberries and pines,* and sometimes disappears again of itself when the conditions have changed."

Kenmore, N. Y.

[This is the second of a series of four articles by Mr. Hershiser on the history and treatment of foul brood. In the first February number he will discuss methods of treatment under various conditions.—Ed.]

A MALIHINI IN THE HAWAIIAN ISLANDS

BY LESLIE BURR

October 12, 1915, is a red-letter day on my calendar, for it was on that day that I first saw the Hawaiian Islands, and at the same time discovered a new name for myself. It happened this way—the new name. I was standing on the corner of Fort and Beretania streets, examining the fire-station and the sidewalk, both of which are made of blocks of lava, and was observing the Hawaiians, the Chinese, and the little ki-

mono-draped Japanese women as they glided past. Some native Hawaiian children with schoolbooks under their arms passed by.

One of the children, a boy of about

* The mysterious way in which European foul brood spreads puzzled the beekeepers of 50 years ago. It is unlikely, however, that the germs of disease would be gathered from forage unless they were distributed to the same by bees from diseased colonies.



Part of Tamagawa's apiary.

twelve years of age, remarked to the other children, "Malihini," and at the same time indicated me. It was a simple thing, perhaps, yet I had been classified, identified, and named.

The city is a mass of vegetation; but most of the trees are old friends, and almost all of them are trees that were imported here. The royal palm is everywhere, perhaps not quite as beautiful as in Cuba; then there is the royal ponciana, the mango, the monkey-pod, and the algaroba. The last is the most common tree in the city. The first algaroba was brought to the island of Oahu by Father Bachelot in 1826. The original tree is still alive, and is to be found on Fort Street near Beretania. For the benefit of the Texas and New Mexico beekeepers I will state that the algaroba is nothing more nor less than their old friend mesquite.

The first apiary, or, for that matter, the first colony of bees that I saw after my arrival at Honolulu, was the apiary of L. Tamagawa, at Diamond Head. I had taken the Waikiki Street car to the end of the car line, and had then started to walk around Diamond Head. This is the crater of an extinct volcano. It is about seven or eight hundred feet high, and its base on one side is in the ocean. After leaving the street-car I had walked about two blocks when I heard the hum of bees; and, looking over the fence to my left, I saw an apiary of some seventy colonies of bees on the base of the crater.

I at once lost interest in my contemplated walk around Diamond Head, and went in to investigate the apiary. It proved to be the apiary of L. Tamagawa, a Japanese. He is an energetic fellow about thirty-five years of age. He was born in Japan, and came to the Hawaiian Islands when a boy. He has been an apiarist for some four years, having purchased his apiary from another Japanese who was returning to Japan.

He showed me a copy of the 1913 edition of the A B C, and seemed very proud of its possession. He admitted, however, that he found it very hard to read and understand. The reason is, I suppose, that he was not familiar with any Japanese words that are the equivalent of the English apicultural terms. Then, too, I noticed that he appeared to be better able to understand writing in Japanese than English, as he kept all his accounts in that language. Even the records or notations on his hives were in Japanese, and I had quite an interesting time having him translate into English what the Japanese characters meant that I found on the hives. His records, while crude, still showed every indication that he had a good knowledge of the elements of practical bee culture.

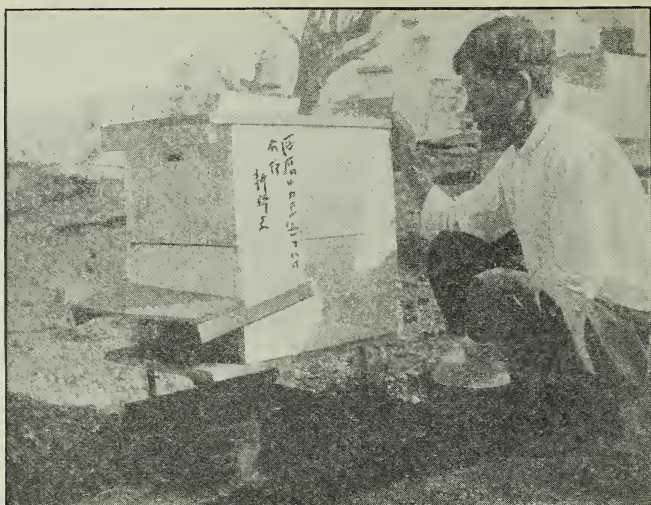
One matter that does not bother Tamagawa is keeping down grass and weeds in his apiary. The particular place where the bees are located is composed of volcanic ash of such a nature that grass and weeds are unable to obtain a foothold or nutriment. The only plant that seemed to be able to

live was the algaroba, or mesquite, as it is called in Texas. From their appearance I should judge that the algaroba was having as hard a time there in that apiary to exist as the mesquite has in some of the desert regions along the Mexican border.

There was one pest, however, and the method used to combat it was new to me. That pest was ants. The way they were combated was by making a framework of 2 x 4 lumber, the same size as a bottom-board. In this frame four holes three quarters of an inch in depth were bored with an inch auger. In each hole a very large nail or spike was driven, and on the heads of these spikes the hive was set. The spike was then coated with oil, and the hole at the base of the spike was filled with crude oil. Tamagawa informed me that it was a sufficient protection against the ants.

The surplus honey is secured from the algaroba. Both comb and extracted are produced.

Tamagawa has a wife, who is a very comely Japanese woman, and two beautiful children.



Tamagawa looking over the colony. Record printed in Japanese on the side of the hive.

As I watched the mother playing with the two little children under a bread-fruit tree in the yard, I could not help thinking that L. Tamagawa must be a happy fellow; and remember that gray hairs are creeping in among the brown on the crown of my head. But then, otherwise I should not be a malihini interviewing a Japanese beekeeper on the Island of Oahu.

Honolulu, T. I.

[This is the first of a series of articles entitled "A Malahini in the Hawaiian Islands." The second will be published in an early number.—Ed.]

THE CHICAGO AND NORTHWESTERN MEETING

BY J. L. GRAEF

One of the striking utterances at the annual convention of the Chicago and Northwestern Beekeepers' Association was that of President N. E. France, of Wisconsin, who said that European foul brood had been a blessing in disguise. He spoke from his experience in wide travel among beekeepers in his own state. The presence of the disease had aroused apiarists to the necessity of understanding it and to prevent its recurrence. He said he knew bee-men who had said, "I am glad I had it. I'll know how to take care of it in the future."

A year ago, when Mr. France was at the meeting, he said that within three years there would be no European disease in Wisconsin. He said that his people would be

clear of it today had it not been for the lack of co-operation, and the failure to report cases. Some time ago he asked apiarists whom he knew as beekeepers to give him the names of five neighbors who kept bees. This resulted in his getting 1500 names. They were beekeepers, some of them keeping bees in only a small way, whom he had never known before. Seventy of the fifteen hundred had foul brood in their apiaries. It is the man who has a few bees, and because he has so few he thinks it isn't worth while to report the presence of the disease, who causes the trouble. Were it not for this fact, Mr. France said, his prediction of last year would have come true by this time, or in but a little while longer.

There was but a small attendance at the meeting this year. Old-timers have dropped out, and young blood has not shown up as strong as desired. Secretary Bruner said that when he took the position last year he had a list of 150 members. He undertook to round them up, but was able to find only twenty members who could be depended on to attend a meeting. The others, in most part, were either dead or had moved away.

Despite this discouraging report there was much life in the meeting, and committees have been appointed and are to work up a plan by which it is hoped to make this old association take on the life of olden times. It is proposed to encourage membership and attendance at meetings by adopting the Michigan plan of awarding medals for fine exhibits of honey and honey products at future meetings.

It was also resolved to get a line on those who are promoting the work of domestic science and carrying on cooking demonstrations in schools, to the end that honey may be recommended as pure food, listed along with numerous other articles as desirable and healthy food for the human family. A committee was appointed to see the heads of instruction of state and city, to the end that the product of the bee may get a fair

show in the schools along with other pure foods.

The beekeepers also passed a resolution asking the state fair officials of Illinois to provide a separate and adequate building for the use of the beekeepers of the state so that demonstrations in the use of honey as a food may be properly made, and the honey-producers thus get a fair advertisement.

One of the members said that he had succeeded in getting his neighbors to take up the work of beekeeping by inviting them to witness his own operations.

One of the beemen of the Fox Valley, in Illinois, said that it is a mistake that the associations do not hold meetings more frequently. His own local association held a meeting every two weeks when important business made it necessary or desirable.

The Chicago-Northwestern Association voted to sever affiliation with the National, but decided again to affiliate with the Illinois State Association.

Officers were elected as follows: President, N. E. France, Wisconsin; vice-president, E. S. Miller, Valparaiso, Ind.; secretary and treasurer, J. C. Bull, Valparaiso, Ind.; delegate to Illinois State meeting, J. C. Bull, Valparaiso.

Chicago, Ill.

WINTERING BEES IN SUPERS

BY JOHN E. ROEBLING

I did not wish to imply in my article, page 863, Oct. 15, and as mentioned by Grace Allen, p. 969, Dec. 1, that twenty frames with honey scattered around in each is an ideal winter brood-nest. Our plan is to fix up for winter late in the fall, after the first cold spell of heavy frosts, at which time the bees will have formed their winter nest. Then on some cold day when the thermometer registers slightly above freezing we start in and take off all the supers, both comb and extracted, note amount of winter stores, and location of brood-nest.

The comb-supers will be free of bees at this time, and also do away with all trouble from robbers. If we note the bees have located the winter nest in the extracting-supers immediately above the brood-body, and this super seems to be light of stores, with nothing below, we get another super containing some stores, enough combined with the two to carry them safely thru the winter, and place it under the one containing the brood-nest. This plan has always succeeded well with us.

I much prefer, however, to find the bees prepared to winter in a super containing an abundance of stores, and then take one of the empty supers, or nearly empty, and place underneath for the queen to get busy with in the spring. I believe this to be the ideal condition for wintering, at least in this locality, as they breed up fast and come out strong. My theory is that it is much dryer and warmer in the upper super than it would be if this super were placed direct on the bottom-board, surrounded by snow, water, and ice the greater part of the winter.

Some of the brood-nests run for comb honey are very heavy, practically honey-bound; hence very little headway will be made in the spring for lack of room. Many of these are treated to a set of the extra extracting-supers underneath, and will produce a surprising number of bees early in the season. Shallow-frame supers are also used, above and below. This plan also does away with opening of the hives to put on supers too early in the spring. Sometimes

the weather changes and turns very cold, and much damage is done by the chilling of brood. I find it bad practice to open the hives much before drones are beginning to fly freely and honey coming in, as the bees are inclined to be cross otherwise, and sometimes the queens disappear, the latter frequently where clipping is done too early in the season.

We cover with the regular escape-board, deep side down. This enables the bees to cross from frame to frame, and they will never be found dead in the spring with honey in the adjoining frames. We place the packing on this board, burlap sacks and newspapers, and use the A-shaped cover, shingled. This makes an ideal cover, with good ventilation in summer, and always

perfectly dry. The covers are heavy and will not blow off.

I do not like the idea of opening the hives so late in the season; but it enables us to work fast, and there is no fear of robbers getting the upper hand. We try to choose a day when the bees will take a flight during the warmer part.

If any of your readers are troubled with skunks I have found it a very good plan to place a pane of window glass on the alighting-board. This will cast a reflection from the stars and sky, as one passes by; and these night prowlers fight shy of anything that apparently moves which they do not understand. They are said to be easily trapped, but I have not found it so.

Cincinnati, Ohio.

SOME UNCOMMON HIVES

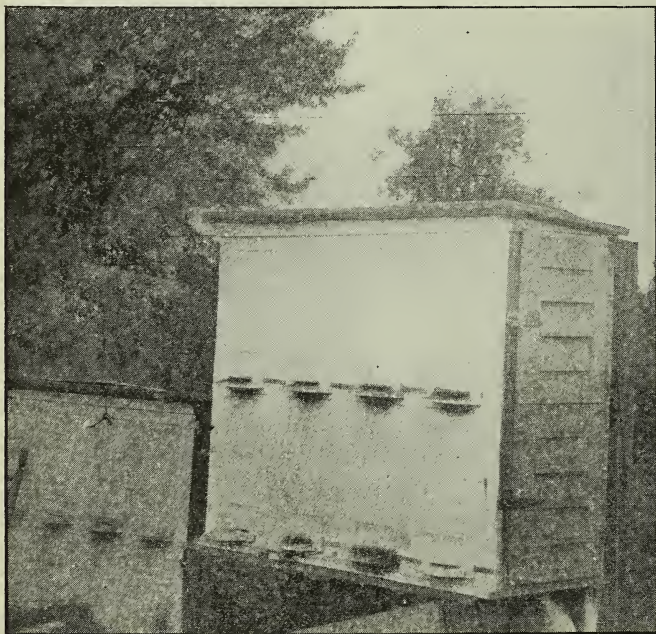
BY E. G. CARR

Not the least interesting of the things which enter into the bee inspector's life are the different types of hives which he sees—not alone the nail-keg and grocery-store box, but also the home-made hives upon which has been put much care, labor, and considerable expense. These statements apply with special emphasis to New Jersey, since there are so many beekeepers in this

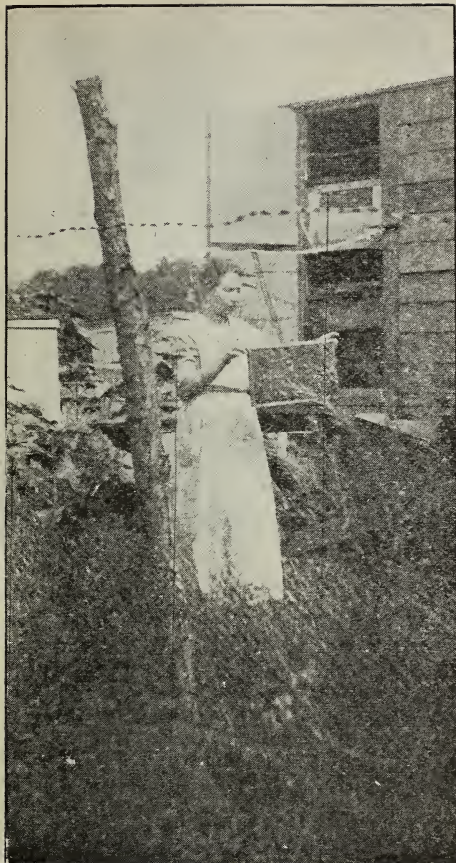
state from foreign lands, and it is the rule for these to cling to the ideas of the mother country. It is seldom they do not make considerable effort to provide a good home for the bees.

Perhaps the oddest type from the viewpoint of the American beekeeper is the Polish hive shown in the illustration. This is made similar in appearance to a cupboard, and it houses three to eight colonies or families. The hive in the picture is made for eight colonies and is owned by Mr. R. Kohlos, of Woodbury, N. J. In the illustration showing the rear of the hive is seen Mrs. Kohlos, who is a very able bee-woman.

It will be noticed that the frames of this odd hive are crosswise of the entrance, and either hang on metal rabbits or fit into the grooves in the hive-sides, and are removed from the back of the hive. It is, of course, necessary in getting at a particular frame to remove all frames in front of it.



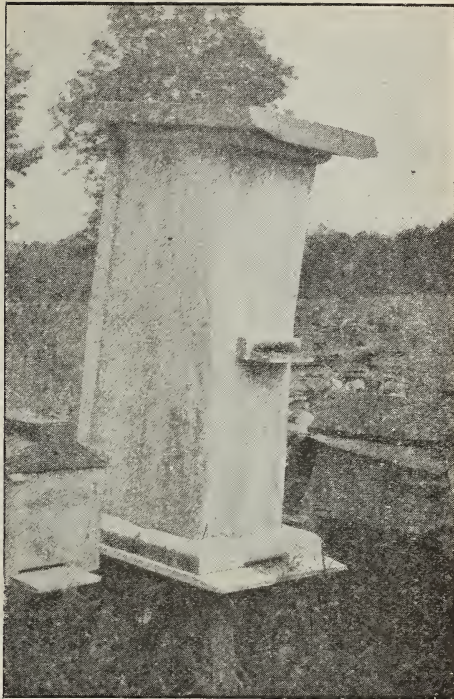
The Polish hive is similar to a cupboard.



Mrs. Kohlos is an able beekeeper.

Sometimes there is a small portable rack in which the frames are hung as removed, and a pincers-like tool is used in removing them.

It is pleasant to know that the Kohlos are not satisfied with this type of hive as compared with the modern frame hive, and



Two-story hive made from a section of a tree-trunk.

propose to change all the colonies to the latter type as soon as convenient.

The next illustration is a general view of this interesting apiary, which contains, besides the Polish hive, a battery of eight hives in a row, and all built together somewhat after the fashion of the original Langstroth hive.

Another curious hive contains two colonies, and is on the back-opening Polish style, with movable frames, but is made from a section of tree-trunk.

New Egypt, N. J.

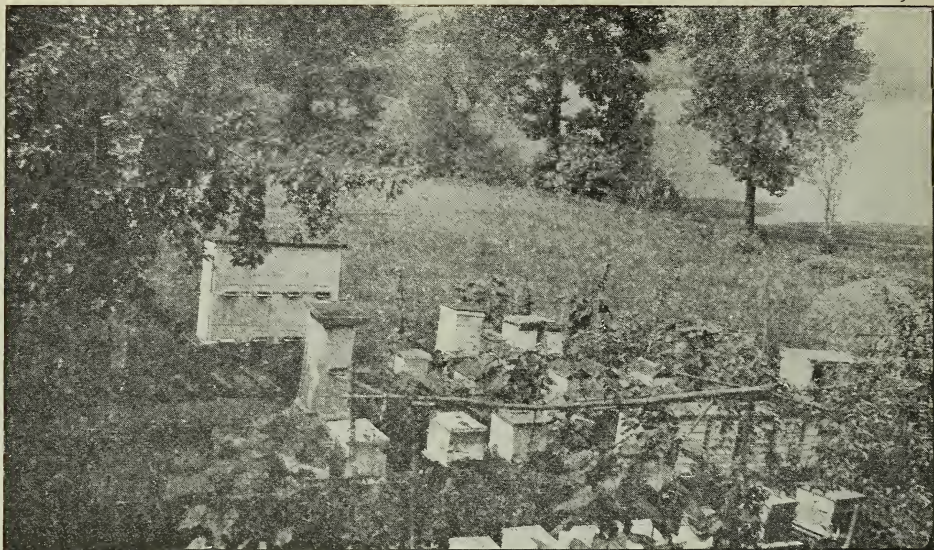
THE SMOKE VS. THE CAGE METHOD OF INTRODUCING QUEENS

BY A. C. MILLER

Editor Gleanings:—I note what you say in the Oct. 15th GLEANINGS concerning the distress or smoke method of queen introduction. I am surprised at your results, for so many find it successful. Even were it not better than the cage method, I should continue to use it, for a failure is known the same or the next day, while by the cage method it sometimes is a week before the queen is out, and a day or two more before

we know she is safe. Either you have a different operator or there is carelessness in creating the condition of distress.

This year, Nov. 6, I dequeened some twenty colonies of hybrids, and ran in the new queens. Breeding had been stopped for some time, and it was none too easy to find the old queens; but it was all done, and new queens in within three-quarters of an hour. Every queen was accepted. I



The interesting Kohlos apiary.

knew it before I left the yard an hour later, and was sure of it on an inspection made later.

I do not recommend requeening so late; but I had the queens, and the very late and mild season led me to make the experiment.

A veteran beekeeper near by tried to put in eight queens from the same lot into just the same sort of bees. He used the cage method, and lost seven out of the eight.

Providence, R. I.

[We have just been interviewing our men who work in the yards, all of whom, without an exception, we have had for a number of years. On further inquiry we found that the reason they do not use the smoke method is because it takes more time than the cage plan. The former must be carried out very carefully, and, finally, the queen must be put through a contracted entrance. Sometimes they get away from the operator. The men say they can introduce by the cage method more rapidly, especially when there is a large number to be intro-

duced. Furthermore, the smoke method will not answer in the case of nuclei, either with the babies or with the larger ones.

We introduce hundreds of queens at a time, and the cage method is invariably used with all our colonies.

If the directions are followed, the smoke method, barring an occasional queen that gets away from the operator, is quite reliable, and will probably introduce a larger percentage than the cage plan; but by the latter plan our loss probably does not exceed one per cent; and the time consumed in introducing a hundred queens by the smoke plan will more than offset the value of one queen.

There is one thing sure, and that is, the directions for introducing by the smoke plan must be followed out to the letter. Right here is the difficulty with some beginners. If they are a little timid in handling a queen they may let her get loose. For the average beginner we believe that the average candy-cage plan is the safer.—Eb.]

ONTARIO BEEKEEPERS' ANNUAL MEETING

BY MORLEY PETTIT, SEC.

The annual meeting of the Ontario Beekeepers' Association held recently in Toronto was a record-breaker in point of attendance, two hundred beekeepers being present. President Byer, discussing heavy winter losses of 1914-15, attributed them to

inferior stores and the poor breeding season of the fall of 1914. Demand for honey is good.

Morley Pettit, secretary-treasurer, reported a membership of 1130 and a balance on hand of \$234. A large number of members

were buying queens co-operatively thru the association.

Dr. E. F. Phillips, F. W. L. Sladen, and Prof. L. Caesar delivered addresses. F. W. Krouse, of Guelph, was elected president, and James Armstrong, of Selkirk, and W. W. Webster, of Little Britain, first and second vice-president, respectively. Morley Pettit continues as secretary-treasurer.

An attempt will be made to increase the

fine against spraying trees during fruit-bloom from \$25 to \$100. The provincial apiarist has been requested to conduct experiments to find the effect on bees of sweetened poisons for the destruction of grasshoppers and field-pests. The Dominion Government will be petitioned to take measures to prevent the importation of bees from diseased districts.

Guelph, Ont.

PROBLEMS OF MARKETING GET ATTENTION OF INDIANA BEE-KEEPERS

How to sell honey was the chief topic of discussion at the convention of the Indiana State Beekeepers' Association held at Indianapolis December 10 and 11. Wallace Buchanan, representing the postmaster of Indianapolis, talked on "Honey by Parcels Post." The Farm to Table movement, he said, is growing, and its success is all a matter of proper packing.

"Instead of packing honey 24 sections to the case, why not pack it 3 or 6, or just the way the average family would want it? Comb-honey cartons can be made to hold three sections at 2 cents each carton, or for six sections at 3 cents for each carton. The total cost of container and postage shows that it pays to ship one pound by mail.

"If it pays a man in Boston to ship his cod and mackerel all over the United States by mail; if it pays in Los Angeles to ship nut kernels all over the United States, why can't the beekeepers market honey by the same plan? Simply advertise, and make the buyers know where it can be obtained."

George W. Williams, secretary of the association, read a paper, "One Promising Outlet for Dark Honey." He said, among other things, "The karo people are pushing their product, and the honey people are not. You will see karo attractively displayed on half a million shelves and its posters on ten thousand billboards. In the meantime honey is not seen on the shelves, no pictures appear in the windows, no publicity in the papers, and the beekeeper sits tight, doing nothing and keeping eloquently silent.

"The beekeepers' associations should take steps to have the value of honey as a staple food, and especially the value of the darker grades in cooking, taught in the domestic-science departments of the public schools."

Miss Emma Piel told how she met outside competition. "I believed that to put my honey in glasses was the best advertising I could do. I heard compliments of all kinds for my honey. People stopped me on the street, and said they had found my honey fine. I had no trouble in selling my honey this year in larger quantities."

B. F. Kindig believes in saying things right out. "The distribution of Indiana honey is extremely poor. We find one market where you can sell honey if you only mention it, and others where you can hardly give it away. There is a tendency on the part of beekeepers to stampe the large markets. Too many think they must sell the honey as soon as they get it off the hives. Their surplus might be moved with a very little advertising. There is a poor quality of salesmanship among the beekeepers of this state."

The opening address was given by Mason J. Niblack, president of the Association. He read a paper by C. P. Dadant on out-apiaries. Miss Emma Baylor, of the state department of public instruction, asked the beekeepers to furnish free literature on the food value of honey for distribution to the students of the domestic-science departments thruout the state. Prof. D. A. Rothrock read a paper on aster honey.

FEEDING DRY SUGAR

BY W. J. SHEPPARD

I have noticed that very little reference has been made in the bee journals during the last few years to feeding with moist sugar, or "dry-sugar feeding," as it used to be called. I conclude, therefore, that it must have fallen into disuse somewhat.

The past season here was a very poor one. After an unusually fine, dry, and warm February, March, and April, the three succeeding months turned wet with low temperatures prevailing all through. Consequently very little nectar was available

for the bees, and in June a good many colonies were actually on the verge of starvation, and ran down in strength. Feeding, therefore, became absolutely necessary.

Under these circumstances, and as I am away from home a good deal, I decided to feed with moist sugar. I had some nuclei in which the queens had stopped laying; but very soon after the bees got on to the "dry sugar" there was quite a transformation. The queens started laying again in earnest, and the frames were soon full of brood once more.

The feeder hangs like an ordinary frame. It is easily and cheaply made by nailing a thin piece of board on either side of an ordinary Langstroth frame after first cutting out the top-bar, excepting about an inch and a half at either end. The sugar can then be put into the feeder at the top and pressed down tight, and it will hold three or four pounds. A loose piece of thin wood can be fitted in the top in place of the top-bar that is cut away, leaving, of

course, a bee space under for the bees to enter. This will keep the quilt in its proper place so that it will not drop into the feeder and prevent the bees getting in.

The advantages of dry-sugar feeding consist in the stimulating effect it has on the bees, as apparently they are not able to take it fast enough to store it in the combs, so that it is practically all used for feeding the brood. Also, after a feeder has been filled and given to the bees it will not require much attention, as it will not need replenishing for a long time, if at all. The best sugar to use is a moist cane sugar with a fine grain such as Porto Rico.

I feel convinced that, for this province, where in normal seasons we generally get a wet June, dry-sugar feeding will be very suitable, as it will be the means of keeping colonies up to full strength so as to be ready for the main honey-flow in July. Filled with sawdust or cork dust, these feeders make good dummies for winter packing.

Nelson, B. C.

1915 WITH THE WIRE ESCAPE-BOARD

BY A. J. KNOX

The difficulties of brushing bees from the combs in the production of extracted honey have led many beekeepers to turn eagerly to any device that promised a measure of relief from existing troubles.

Since the general adoption of the Italian bee it has become harder to shake the combs clean. A slight jar previous to the shake causes them to stick fast. When the wire escape-board appeared I decided to try it, and to that end made fifty boards. In some of them I put the regular double-end Porter escape, set in the center of a strip of wood running across it. In others I put two single escapes on this strip, one at each side. In yet others the double escapes were simply soldered into a hole cut in the center of the wire, without any wood running across.

In use I did not find any appreciable difference in the time taken to clean the bees out of the supers by any of the methods of attachment or positions of escapes in the boards. I did find it made much difference whether the escape-board was put next to the brood-chamber or under the second or third super. When next to the brood-chamber it took from two to four days to clear out the bees; under the second super, from thirty-six to forty-eight hours. Placed under the third super, the bees would usually all leave in twelve hours.

One obstacle in the use of escapes is found in the brace-comb that is frequently built between the supers. If there is perfect uniformity in the bee-space clearance over the frames, there is not so much trouble; but taking outfits generally, there is quite a percentage liable to this drawback. In this connection the new two-piece board put out by Morley Pettit, the provincial apiarist, is quite an advantage. The board is really two boards, meeting in the center, and having a single Porter escape in each section.

One end of the hive is pried up, and one section of the board slid in. Then the opposite end is treated likewise, the boards meeting in the center. By this method considerable brace-comb can be squeezed thru, and the boards are very convenient and pleasant to put on. On the other hand they cost more money, and are more bulky to haul around to outyards. The boards are successful in retaining the heat of the honey, and make extracting lose most of its terrors, especially after the flow.

Sometimes, however, it is difficult to know just where you will be obliged to extract first; and by the time you find out, the delay necessary for their use can't be afforded. They also involve an extra trip to the outyard, and the time required to put them on is considerable. In a well-equipped



The lament of the drones.

apiary, abundantly supplied with supers, they are a delight to use, but have no place in a hurry-up job where supers are short.

Where thin nectar has been stored in supers, and the wire escape put on before it is ripened, the heat of the colony and the evaporation process going on below does not seem to ripen it properly.

After the rains, the bees in this locality stored some thin nectar from a second bloom of white clover. The buckwheat was

out; and to keep it from mixing, and allow the thin clover to ripen up, a wire escape-board was put under the top, or second super containing the thin stuff. This was left on the hives for a couple of weeks: Result, the only sour honey I ever had, and I am glad there was only 200 lbs. of it. It looks as if the presence of the bees on the honey were necessary to the proper ripening of it.

Orono, Ont.

AS GLIMPSED THRU THE CAMERA

Some Common and Uncommon Sightings among the Bees

BY H. H. ROOT

During the last year we have been accumulating quite a number of pictures that we have taken of various subjects pertaining to bees, only a few of which have appeared on these pages. I propose to take up in a series of articles one or two subjects at a time, presenting the pictures and letting them tell largely their own story. We all like to look at pictures. If this were not true the motion-picture shows would not be so successful.

Twenty years ago, only an occasional beekeeper owned a camera. Now a very large number own cameras or kodaks, and the resulting half-tone engravings on the pages of bee-journals are a great improve-

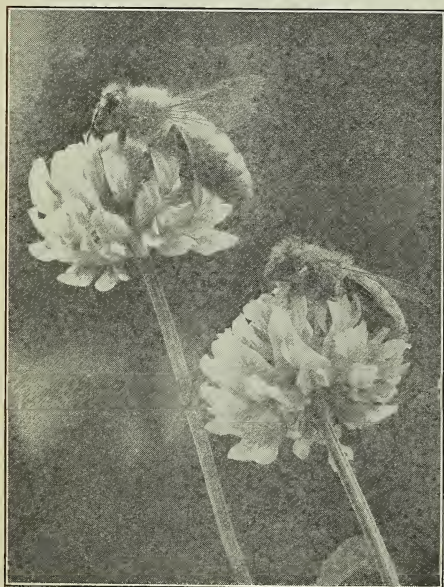
ment over the invariable zinc etching from a pen-drawing, or wood engraving characteristic of the time before the kodak, or hand camera, revolutionized picture-taking.

We are asked so many questions on photography that perhaps a few general remarks, first, concerning our equipment, may not be out of place.

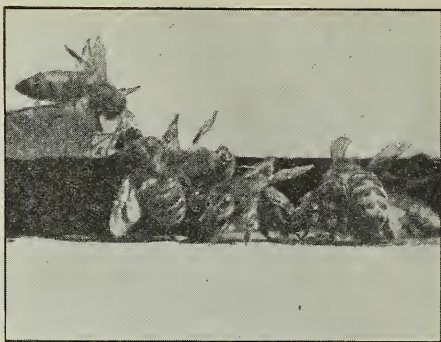
For picture-making about home we prefer glass plates rather than films. They cost but little over half as much, are somewhat more convenient to handle, and they may be obtained in a variety of emulsions suitable for all classes of work. There is no one all-around plate suitable for all kinds of pictures. We use Seed 23 plate

for copying, and frequently for landscape views, such as apiaries, etc. For general quick work about the apiary showing operations, etc., the Seed 27 is better, which has the same speed as the film ordinarily used in kodaks. For photographing live bees on flowers, or on combs, a faster plate is necessary. The Seed 30 may be used, which is about twice as fast, but we prefer the Seed Graflex, which has a speed about four times as fast as the No. 27. In other words, if a picture could be taken in $1/25$ of a second with the No. 27 plate, or with kodak film, $1/100$ of a second would be ample exposure if the Graflex plate were used. Taking life-size pictures of live bees requires an exposure as short as $1/100$ of a second, or even $1/300$ of a second. Therefore, extremely rapid plates are required. Such fast plates as the Seed Graflex require a little more careful handling in the dark-room in order to prevent fogging, but are otherwise developed the same as any negative.

For photographing honey, or for obtaining the correct tone values that show the right amount of contrast between certain colors, Panchromatic plates must be used. We use either the Wratten or the Standard Panchromatic plates for such work. Frequently a "filter" must also be used over the lens during the exposure. In a later article, illustrations will be used showing the correct and incorrect tone values of honey in glass.



The "worker" bee.



A bee with a load, too busy to dodge a loiterer, unconcernedly climbs over.

In making prints we use Azo paper, Grade F, which is a white glossy paper. We use three different contrasts—the Soft, the Hard, and the Hard X; the Soft for harsh contrasty negatives; the Hard for medium negatives, and the Hard X for thin negatives lacking in contrast. Many prints submitted to us by beekeepers are unsuitable for half-tone reproduction. In such cases, if the picture seems to warrant we send for the negative, and in almost every instance we find that, by using the proper paper, a much better result can be secured. If the negative is all that it should be, the Soft paper will produce the best results; but many negatives are so lacking in contrast that a harder paper is necessary in printing.

Even when the photograph is clear and distinct, the half-tone reproduction may not be all that is desired. The illustration of the drones on the preceding page is from the same photograph as the illustration accompanying Mrs. Allen's poem in the November 1st issue, "The Lament of the Drones." The first engraving was too small, and was not a very good engraving at that.

PHOTOGRAPHING LIVE BEES AT CLOSE RANGE.

Last summer I had photographed bees working on different kinds of blossoms, and had been having, therefore, an excellent opportunity to notice the feverish yet joyful motion of the bees collecting pollen, like the nervous yet enthusiastic ways of a man possessed with the get-rich-quick idea. I had also secured pictures of bees with loads of pollen on their legs, and I wanted to get one showing the business-like rush of a pollen-laden bee into the hive. But, to my surprise, I found the rush so truly business-like that catching it with even a fast plate and a quick-working shutter was not easy. I finally did secure an exposure that show-



Queen poking her head into cell to see if it is polished ready for a new egg.



Queen laying. Note the circle of bees around her in mute adoration.

ed the bee rushing in with pollen, but it was not quite up to my expectations.

In making these photographs I observed incoming bees absent-mindedly climbing over any loiterers on, the alighting-board, that did not happen to get out of the way soon enough. It was exactly like two people meeting each other on a narrow sidewalk, and both dodging back and forth until one in disgust gets clear off and allows the other to pass, only the disgusted bee carrying the load calmly climbed over the offender—too busy to stop and go around—and then hurried into the hive without looking back, as much as to say, "There, perhaps that fool youngster will know enough to keep out of the way next time."

The illustration shows the *busy* bee just half way over the lazy one. Just watch the alighting-board some day next spring when the air is warm and the soft maples are in blossom, and see if you can not imagine the same conversation.

The next illustration shows a scene familiar to every beekeeper—a queen with her head poked down into a cell momentarily to see if it is ready for an egg while the surrounding bees wait almost breathlessly; and at the right the same queen with her abdomen down in a cell in the characteristic position of laying, the admiring bees meanwhile standing about with their heads toward her, some of them caressing her.

To be continued

THAT NEW BEE DISEASE IN THE WEST. THE SYMPTOMS. IS THERE A CURE FOR IT?

The Isle of Wight Disease in England a Terrible Scourge

BY W. HERROD-HEMPSTALL

[On pages 784 and 922 we asked for reports giving the exact symptoms of the new bee disease that has killed so many thousands of adult bees in the West and particularly in the Northwest. We received a good many letters; but among the number are two from England that refer to what is known as the Isle of Wight disease, and which is possibly the same thing that has been causing trouble in our own country. In this symposium we give first the letters from England and then the others, from the United States. Editorial comment will appear in the regular editorial department.—Ed.]

I have watched very closely the various articles which have appeared in GLEANINGS on the great loss of bees in the various parts of America. I therefore feel constrained to write and warn American beekeepers of their danger. From the accounts, I am quite certain that the loss of bees is occasioned by *Microsporidiosis*,

otherwise Isle of Wight disease. The Americans, to comfort themselves, are making the same mistake that was made in this country when it first broke out—that is, attributing it to sprays of various kinds. In this country we have had beekeepers go so far as to say that loss was caused by the tar spraying of roads. Let there be no

mistake. Everything has been tried in this country as a cure, without success up to the present. Therefore the only means of checking or eradicating the disease is to destroy at once any colony showing the well-known symptoms. If this had been done in Great Britain at the first, the terrific loss which we have sustained would not have occurred. Our most practical and thoro beekeepers are helpless in the face of this disease. When an apiary is attacked, the owner is in the same position as a man whose house is on fire and no water available to put it out within a couple of miles. The disease is not unknown in America. I am speaking from memory as to the date of issue in GLEANINGS, but think it was in 1885 when some one wrote a letter descrip-

tive of a mysterious outbreak of disease in the Utah Valley where thousands of colonies were lost. That letter might have been a descriptive one written by a Britisher on the symptoms of Isle of Wight disease in his apiary. Knowing as I do the serious consequences of this disease, as I have experienced in my own apiary, where all the 126 colonies were lost, I again urge upon my American brother beekeepers to destroy ruthlessly all affected colonies and their combs; thoroly disinfect the hive, not only for their own sake, but also for the sake of their neighbor beekeepers, as robbing and the soiling with excreta of the drinking-place are the chief sources of contamination.

London, England.

THE NEW BEE-DISEASE NOT AFFECTING THE BROOD

BY C. H. BOCOCK

I have been much interested in accounts that have from time to time appeared in GLEANINGS of wholesale mortality among bees in the United States, and particularly so in that on page 784, Oct. 1. Bees hopping about in the grass, and collecting in bunches on the ground, is what occurs in cases of *Microsporidiosis* (the so-called Isle of Wight disease), which is yearly making larger and larger inroads into the number of stocks in Great Britain, until a bee threatens to become a *rara avis*. Incidentally I may mention that my own losses have been 260 colonies.

If the disease around Seattle is *Microsporidiosis*, Prof. Kincaid is either in error or has been incorrectly reported in saying that the bees' heads are full of spores. Nosema spores occur only in the gut and the gut-contents of infected bees.

In regard to the dead brood, I agree with you. Altho larvæ may be, and are, infected with *Nosema apis* at an early stage of their existence, there is no microscopic evidence of disease, and the death of the brood is to be attributed to the adult bees of the colony being so diminished in numbers, and the survivors so unhealthy, that they are no longer able to feed the larvæ or maintain the temperature of the brood-nest. Taking away all brood and feeding the bees frequently effects a temporary improvement, but a temporary improvement only. Nosema is still present in the gut, and the colo-

ny ultimately succumbs—usually during the following winter.

The reluctance of sick bees to put up a fight in defense of their stores has been a very marked feature here this autumn—stocks suffering only slightly from the disease and strong in numbers allowing wasps to carry off their honey with scarcely a protest. One consolation is that the wasps carry away the germs of disease, and themselves perish.

If any one in America whose apiary is suffering from a scourge like that described as raging around Seattle, Wash., would send me bees for microscopic examination, packed in such a way that they reach me alive, they would be gratefully received; and if you could put me in communication with any one whose apiary is so affected I should be doubly grateful. I suppose that, during the winter months which are now upon us, it would be impossible to avoid the bees perishing on the journey, and dead bees would be of no use for diagnosis. The bees sent should be taken from the hive. Crawlers picked up off the ground should on no account be sent, as these would inevitably perish *en route* at any period of the year. But during the warmer months I should think that it would be quite possible to get bees thru in good condition.

I should be pleased to report to the senders of bees the results of the examination.

The Elms, Ashley, Newmarket, England.

THAT WESTERN BEE-DISEASE; THE SULPHUR TREATMENT HELPFUL

BY M. W. HARVEY

[Mr. Harvey has in the neighborhood of 700 colonies of bees. He was the subject of an article by Wesley Foster, April 1, 1914, in his series "Beemen I have Known."—Ed.]

I had six cases of the new western bee disease in one yard and one in another, the yards being three miles apart.

The first to show the disease was my ten-dollar golden breeder and two of her daughters. I treated them with sulphur, and the trouble was checked. I continued to treat them for two months with sulphur every two days; and when settled warm weather came it disappeared. They then built up and made two supers of honey around.

The other queens were one leather Italian, one black and two hybrid. So it seems that the disease is no respecter of race. They were treated with sulphur for about a month twice a week, and the disease seemed checked; but when I stopped treatment in a week or ten days the bees would start dying as badly as ever. Then I tried a physic, but I suppose I did not get it strong enough, as it had no apparent effect. So I returned to the sulphur treatment, and kept it up until the main honey-flow commenced. Up to that time the two hybrid colonies were getting strong, and the bees had about quit dying. They had three and four frames of brood, and plenty of bees to cover the brood; so I left them alone for three weeks,

and concluded they were safe to take care of themselves; but what was my surprise when I went back to them at the end of the three weeks to find one dead and the other with queen and a handful of bees!

The leather Italian and black colonies got so weak by honey-flow time that I killed the queens, gave each three frames of sealed brood and young bees; then I gave a golden queen to each. At the end of the season of 1915 they were as good as the best colony in my yards.

My conclusion is that it is a bad case of paralysis. The actions of my bees were the same as described by Mr. Ladd, of Oregon, in *GLEANINGS* for Nov. 15, p. 922.

I hardly think that weather conditions have anything to do with it, as my bees are at Reno, Nevada, and we had a cold late spring lasting until June 16; but the disease lasted into July after hot dry weather had come.

I feel sure it is the same disease that weakened the bees so badly in Mason Valley, Nevada, in 1914, that the honey crop was practically lost, tho I did not hear of the disease appearing there this year. But if it makes me another visit I will find a cure or kill the bees trying.

Sebastopol, Cal.

THE NEW BEE-DISEASE IN TEXAS; BAD WEATHER ONE OF THE CAUSES

BY ALFRED L. HARTL

Four years ago in the spring my bees bred up nicely, and at the approach of the spring honey-flow they were very strong. Just at the opening of the flow we had considerable cool and rainy weather which kept the bees in their hives for about two weeks. After a few days of this weather I noticed considerable dead bees at the entrance of a few colonies, but didn't pay any attention to it. Next day I again went among the bees in my home apiary, and found that all the colonies in the apiary were affected. Of course some were worse than others, so I at once examined the colonies and not only found that the bees were dying but also the brood. In a few colonies the entire brood was rotten, and so of course I felt as if I were sitting in hot water. I then sent a sample of brood to Washington, D. C., and then went to my four other apiaries and

found the very same disease there. Some colonies had handfuls of dead bees at the entrances and lots of dead brood, so I started to treat them as for American foul brood, but without any good results. The brood in the new combs was just as rotten as in the original combs.

Then I received an answer from Washington, saying it was sac brood. It seems to me when a colony is badly affected with this malady it loses its energy, and consequently most of the brood will be starved, which will rot in the combs till clear sunshine comes.

I don't think there is another disease that can cripple an apiary in a few days as this does, for the bees die by the thousands, and hardly any brood will hatch. Of my five apiaries (560 colonies) I lost 13 colonies outright, and got no surplus from three

apiaries, and only a small crop from the other two apiaries.

The symptoms are not the same as for bee paralysis. The bees tremble but very little, and are not as shiny, and but few are swollen. In fact, some bees that look healthy in every way run out of the entrance, but are unable to fly, fall off the alighting-board, and crawl away.

After trying different treatments without any results I have come to the conclusion

that the only cure is settled warm weather for a few days. I positively know cool rainy weather causes its appearance, for the next two seasons whenever we had several days of weather that confined our bees to the hives the disease would reappear. Fortunately, the last two seasons I haven't had a trace of the disease, altho it still gives me the chills when the weather is favorable for its appearance.

Elmendorf, Texas.

TREATING BEE PARALYSIS IN WASHINGTON

BY MRS. A. A. GOOD

I do not think the old or new disease that has been so bad in western Washington this year is in my apiary. From the description I have read in the journals at different times I think my bees have paralysis. The first I saw of it was in 1911 in a colony whose queen was raised from an egg of a queen I got from Texas. Every year since then, except this year, I have bought one or two queens from the East, and in nearly every colony where I have queens raised from the eastern queens the disease has appeared, and once a year afterward it broke out in the colony where I had put the eastern queen. I have never had it in my native bees. I say "native" because my bees are descendants of bees taken from the woods. They are not black bees. They are as good-looking Italians as any that were hatched from the eggs of the Italian queens I bought, except the golden.

When the disease first starts there appear a number of small black shiny bees with their wings slightly spread, and some of them trembling. Then there will be bees

with distended bodies, some trembling, and some stupid; and, if let alone, the colony will dwindle away. I cure it by killing the queen and giving them sealed brood and a queen-cell from a healthy colony. I have tried introducing a queen, but have never been successful in getting one accepted in a diseased colony.

The spring of 1915 was the best one in my apiary that I have seen in my seven years of beekeeping. The bees built up well and stored some honey in April. Then it came off dry. By June they had used up all their stores in brood-rearing, and in July I had to feed a number of colonies or they would have starved. I have often wondered if hunger and poor honey did not have something to do with this new disease.

There was a two-weeks honey-flow in August, and the most they gathered was honey-dew off the leaves of the alders, and that is all they have in their hives now; but our winters are mild, and I hope the bees will come out all right in the spring.

Lakewood, Wash.

A SUCCESSFUL SULPHUR TREATMENT OF NOSEMA APIS

BY O. S. DAVIS

The bees about here have *Nosema apis*, Isle of Wight disease, just plain paralysis, or something, all right. I have seen a hundred colonies at one time in our apiaries affected; that is, the bees were sick, crawling over the ground in all directions, and dying everywhere. Some colonies were very much worse than others, and our best colonies were often the worst affected. Some of the bees were shaking as with the palsy, others were slick and shiny, some had distended abdomens, and some had a pinched-up appearance. Queens became affected

and soon died. In a few hives the brood died—from chilling, I think.

We tried sulphur according to the A B C and X Y Z—i. e., we took the brood away and sulphured the bees thoroly. They generally died. Then a neighbor beekeeper told us to put sulphur on the alighting-board, but it did not work very well. So we got a sulphur-machine that my brother uses to blow flowers of sulphur over the grapevines to fight mildew. This machine blows a fine spray of sulphur with considerable force right into the mouth of the hive. We treat-

ed the whole apiary about twice a week with a sulphur bath.

Some colonies responded to the treatment quickly. Others were not visibly affected for two weeks or more. Two or three died. Some colonies took backsets and had to be treated over again. At present (Nov. 26) the apiary of 305 colonies seems all well, but we expect to have to fight the disease again next spring. We don't fear the malady as we did at first. I believe it to consist of a fungous growth on the outside of the bees similar to mildew on the grapes. The sulphur spray does not kill the brood—at least not much of it—unless used more freely than necessary.

Use sulphur often and with discretion, and I believe the disease can be cured every time. The time to spray first is when the first diseased colony is discovered.

In regard to this disease I have arrived at some conclusions by intuition or imitation in watching the farmers fight pests of all kinds—mildew, red-spider, and the like. They blow sulphur among the branches and leaves of the trees when the heat of the sun ranges between 90 and 110 degrees. It is claimed, and I believe it is true, that the sun cooks a kind of sulphurous gas out of the diffused sulphur that means death to these parasitic plants, bugs, lice, mites, mange, itch, ticks, etc.

I notice that the sulphur spray in the

hives, and all over the bee-yard for that matter, seems to do more good during the hotter parts of the day and very little or no good when the temperature is cool (below 80°). We blew the sulphur all over the ground, hives, and dead bees. The apiary smelled like his Satanic Majesty's proverbial palace; and I tell you the disease began to disappear at once. Now please don't imagine that it takes a barrel of sulphur, for we did not use ten pounds. I dare say we wasted part of that.

We need some special machine for the purpose of putting the sulphur in the hives, or possibly a different-shaped nozzle to attach to the machine we already have. This is strapped on a man's back and worked by a hand lever. But the builder designed it for sulphuring vines and trees, and not hives. When we blew the sulphur on the brood we could see minute grains of sulphur in the cells. We killed the brood, and the bees were very reluctant even to clean out and use the combs for any purpose. Still, the light fine sulphuring did no harm that we could discover. Our bees began to build up and get strong right away.

We have increased from fourteen weak, rundown, poverty-stricken colonies to 305 good colonies, and have 560 combs of honey to feed them upon if times get hard with the bees next May or June.

Selma, Cal.

THE SULPHUR CURE EFFECTIVE

BY WASHINGTON D. KEYES

Early in the spring of 1914 I ordered a pound of bees with queen; put them in a hive with drawn combs, and as soon as the brood was three-fourths developed a large portion was attacked, and turned, first pink, then brown, and finally black on the sides of the head, and died. They were cut out of the cells and thrown out on the ground; and when the young bees began to hatch out many of them could not fly, and fell on the ground, crawling around as if they were crazy or blind. This kept up all summer,

and the colony remained weak; but late in the fall I bought powdered sulphur, sprinkled it in the entrance, and on the alighting-board. I took off the cover and sprinkled the sulphur on the tops of the frames and between them; covered the hive up, and in a short time the disease disappeared. The colony came thru in good shape this spring, and is one of the best colonies in my yard—perfectly healthy, strong, and industrious.

Wilkinsburg, Pa.

WET COOL WEATHER FAVORABLE FOR THE DEVELOPMENT OF THE DISEASE; GOOD WEATHER A CURE

BY E. J. LADD

In looking over my records I find that bee paralysis, or *Nosema apis*, has never shown up but that, on a corresponding date, weather conditions were bad. For instance, in 1915, when at its worst, a record shows

continued rain for weeks, and tomatoes and potatoes blighting. In 1912 I find hives A, V, E showing paralysis, weather condition bad, potatoes blighting. In 1908 I find hives 10-a, 12B, and G all showed slight

paralysis; weather bad for a long time. In 1912, all recovered when good weather returned; the same in 1908, but very slowly. I now find in each of those hives eastern Italian queens had been introduced the year previous. In 1907 I lost one by paralysis, weather bad. You by this time must have got the idea this paralysis, or *Nosema apis*, is, beyond doubt, brought about by weather conditions, and by *that alone*. Some, evidently, are more resistant; but I'll bet you that *wherever* it showed up you will find that weather conditions were bad, which, if long continued, would get the bees to a fare-you-well. Two original eastern queens are here today, in hives full of healthy

brood. *Early in the season they lost their colonies when the weather was bad; but when the weather became good, trouble disappeared.* Everything was all right, and is yet. It was a costly season—not a pound of surplus. I just finished feeding the whole apiary. Isn't it possible that *Nosema apis* is a severe and malignant type of paralysis brought about by adverse weather conditions? Bad weather is prevalent in Isle of Wight too.

Fungous growth attacks insects. Isn't it possible that either *Nosema apis* or paralysis is a fungous growth attacking bees when weather conditions are right?

Portland, Oregon.

ARE BREEDERS OF UNTESTED QUEENS GUILTY OF SENDING OUT A MAJORITY OF THEIR STOCK UNTESTED?

BY L. E. WEBB

Editor Gleanings:—If you will pardon a lengthy communication, there are a few things which certainly need a little jacking up in the journals in the interest of the small beekeeper, or, rather, in his protection in regard to queens. I want to give you my experience this year, which has proven conclusively that the average small beekeeper ordering "untested queens" is merely ordering hybrids.

Last year I ordered eight untested Italian queens from several breeders, and not a single one was purely mated. A percentage like that shows to me that breeders are sending out queens that they *know* are improperly mated, under a reduced price as untested.

I had eight this year and three last year, and not a single pure queen in the eleven. In the meantime I have the only Italian bees in this section, being surrounded by blacks; and this year I mated ten queens, and eight mated pure and two cross. That being my percentage, it certainly looks as if a man ordering as many as eight in a season ought to get a few pure ones, any way; so it is evident to me that many of those queens are known to be improperly mated.

Now, the journals do not take up this matter strongly enough—probably for fear of hurting some one's reputation or feelings, and in the meantime hundreds of small beekeepers are suffering for it.

I know and you know that if you were to get eight queens in a season from big breeders, even tho untested, you would get a part pure, any way, or any other big beeman would; but it is the little fellow who needs

only a few, and whose dissatisfaction can't amount to much, inasmuch as he isn't well enough known to use any influence, and could get no voice thru the journals; or, if so, it would be censored down to where it wouldn't have the straight-from-the-shoulder effect; and it is the very ones who palm off these inferior queens under pretense of untested that get large amounts of publicity and who contribute articles, get free advertising in a way, etc., thru the journals, and the little fellow gets it in the neck if, perchance, he happens to be impressed with the talk in some articles and invests in queens.

It is high time some sort of strenuous campaign were commenced in behalf of the beginners, as, of course, they mean the future business.

There are plenty of men caught who never say anything, and of whom you do not hear; and it seems to me that if a man sees an advertisement in GLEANINGS or any bee-magazine, when ordering even an untested queen, he should at least have a chance at getting a purely mated one, and not one that failed for the tested class.

Of course, a thing like that can't be proven; but common sense tells us that, out of a given number of queens, some would be mated properly, or, in other words, if breeders mated as in my case eight queens before getting a pure one, then tested queens would be pretty scarce.

It is apparently a small matter, and yet the very business itself rests on it; and, aside from my experience, I can name a beekeeper who secured twelve "tested" queens, four of which proved to be hybrids.

Of course, a breeder can't guarantee a really untested queen; but this practice of testing them and finding them mixed, and then sending out as untested, should be hit hard; and now ask yourself the question, under any reasonable circumstances, is a man due to get (in two seasons) eleven queens without getting a few purely mated ones?

Morgantown, N. C.

[This seems like a severe arraignment of one or two and possibly more queen-breeders. Perhaps our correspondent happened to get a very bad lot; but he should not happen to get *many* such bad lots. We cannot believe the charge can be laid against the majority of our queen-breeders. As a matter of fact, we know there are some queen-breeders in this country whose untested stock will run from 99 to 100 per cent pure. There may be others who are more careless, and allow their mating-yards to be in localities where there are many black bees. This is neither fair nor square. If we know it we will not accept advertising from such people.

It goes without saying, that a large percentage of untested queens should be pure—not less than 75 per cent. Anything short of that ought to be replaced until the proper percentage is reached.

After all, it is a case of the survival of the fittest. The queen-breeder who continues to send out mismated for untested, or scrubs, will not get any repeat orders, and it will be only by extensive advertising that he will be able to get any new business.

Such extensive advertising unsupported by repeat orders will leave him no profit, and he will be forced out of the game. It follows that the man who has been in the field for years, and gets repeat orders year after year, will have his locality so thoroughly Italianized that there will be no blacks in the vicinity.

We shall be glad to hear from others as to the untested queens they have received, and the percentage of pure matings. If any of our advertisers are in the habit of placing their mating-yards where there are many black bees, we shall feel compelled to reject their advertising of untested stock as soon as we know it.

Perhaps the solution of the difficulty would be to advertise only warranted stock; but that would open a way to fraud on the part of the customer. He could claim that many of the warranted queens sent him were impure, and ask for a replacement whether the facts warrant it or not. After all, it seems fair to sell untested stock with the understanding that at least 75 per cent of it shall show up pure; tested for exactly what they are, and so on up to the select tested and extra-select, and breeders and extra breeders.

Last year we purchased from a prominent queen-breeder 100 untested queens, as we were short of stock at the time—that is to say, our own colonies were becoming queenless. We put them in the hives, and every one of those colonies showed up pure mating, notwithstanding the queens had been sold to fill orders.—Ed.]

BEE CULTURE AND HONEY-MARKET CONDITIONS IN LOUISIANA

BY J. F. ARCHDEKIN

At first it was hard to credit the stories that were told me about the possibilities of beekeeping in this section. Being from Missouri I had to be shown; but the showing has confirmed the stories.

This locality is swampy; and a southern swamp has to be seen and felt to be appreciated. Almost every conceivable kind of tree, bush, and flower grows in them, and they contain an immense assortment of insect, bird, and animal life, ranging from the almost microscopic redbug, or chigger, which makes itself felt continuously, to alligators twenty feet long. It is a naturalist's paradise; and mosquitoes! they are simply terrific. In fact, I never saw so many kinds of insects in my life.

Bees are plentiful, bee-trees being exceedingly numerous. Owing to the favor-

able conditions a bee-tree is permanent when once established, and will exist for years if left undisturbed. People are constantly telling me about bee-trees they have known of for years. Just the other day a man mentioned a tree he found eight years ago. I myself saw two trees cut for bees, not over sixty feet apart. Conditions here are very favorable to bee life, there being absolutely no disease with mild winters, and a continuous honey-flow lasting seven months of the year. The wild bees swarm, and during the spring flow wild swarms are seen almost daily.

In spite of all this, bee culture has been neglected to a great extent in this state. While there are extensive apiaries, here and there, over the state, they are comparatively recent in establishment, as it is only in late

years that the industry has been given much attention. Beekeeping is now in process of development as an occupation; and in the future this state is going to rank well to the front in honey production.

In this section there are a few progressive beemen, and a lot who are not. There is one apiary of probably two hundred colonies near me, all in box hives. Those who are progressive are mostly beginners, so that experienced beemen are scarce.

The country has in past times enjoyed some measure of prosperity; but all that has disappeared, and the people are now very poor. Nearly all of the best people have left, so that large tracts of once productive land are abandoned. The principal crop is cotton; but the farmers have planted one crop after another of it without doing anything to replace the fertility taken from the soil. Consequently cotton farming is not profitable any more. I have been talking alfalfa and red and sweet clover to them; but the seed costs 20 cts. a pound, and they balk at that. Wheat will do well, but the farmers are not progressive enough to take up any new crop. In fact, the only people who are prosperous are beekeepers.

The honey market here is very poor. At one time last summer the finest tupelo honey sold in New Orleans at wholesale at 42 cts. a gallon. There are several causes for this condition. In past years all the honey marketed was taken from bee-trees and box hives. The comb containing bees, brood,

and honey was mashed up and strained, and the product characterized on the market as wild Washita honey. From all accounts it was a villainous compound, and prejudiced the dealers against all honey offered them. Even yet they make no distinction in price, and don't know the difference between extracted honey and this other stuff—I mean the dealers in New Orleans.

Another trouble with the commission dealers is that they have been accustomed to holding up the consignor of cotton or any other commodity, and they are inclined to follow up this policy in handling honey.

On the other hand, they claim that the European war is causing the market to be so low. No doubt it is causing much honey to be sent here from South America and the West Indies that formerly went to Europe. This condition will be only temporary, and will, no doubt, disappear soon after the close of the war. I don't see how the producers of this honey can break even at the present prices, after paying transportation charges, commission, and storage.

The southerners do not eat honey to any extent, and consequently there is no local demand for it; and it must be sent to the northern states for consumption.

This is probably the main reason for the market being so dull. I am fortunate in having a market in my home state for my honey, and have not been forced to sacrifice any of our crop.

Bordlonville, La.

ANNUAL MEETING OF WESTERN NEW YORK BEEKEEPERS

BY WILLIAM F. VOLLMER, SECRETARY

The annual meeting of the Western New York Honey-producers' Association was held at the American Hotel, Akron, N. Y., Dec. 14, 1915. It was very well attended considering the weather conditions. Many more would have attended had there not been so much snow.

After reports of the secretary, treasurer, and delegates to the state association were read and accepted, a suggested constitution was read and adopted. As the weather for two years has been bad on the day of meeting it was decided to hold it in November instead of December as before. Several of the speakers were unable to be present on account of the weather and other reasons.

We had Mr. J. Roy Lincoln, of Niagara Falls, with us, who told of his method of making increase, which was 100 per cent perfect. His method, very condensed, is as follows:

When bees are strong enough to swarm naturally, place all the brood except one frame and queen above the supers above an excluder. When cells are started this top story or nucleus is set off on a new stand, provided the stock was satisfactory for raising queens from. If not, a desirable cell or queen may be given to this nucleus or nuclei, as the case may be. After the honey crop is taken off twenty-four hours, exchange the nucleus and the parent hive. The latter is generally overflowing with bees at this time.

The flying bees or old bees seem to get added vigor by having a young queen in the hive, and seem to work harder and wear themselves out getting the nucleus stocked with brood. This means young bees for winter, which we must have to have a fair measure of success. Thus both colonies are in the pink of condition, with young bees

and plenty of stores. It is rather important, in exchanging, that the bees be not excited, as that might cause trouble in their uniting.

Several members seemed to think that sweet clover has a great promise in store for those who take advantage of the opportunity it gives. The secretary told of the different ways of disposing of the honey crop; namely, by jobber, wholesaler, retail

grocer, and direct to the consumer. He said that he thought the greatest good for all concerned was by the direct-to-the-consumer plan. In many cases this is impossible. Mr. D. C. Hubbard, of Wyoming, told of his views of marketing. Several other questions were brought out and discussed, after which the meeting adjourned. All reported having had a fine time.

Akron, N. Y.

THE HANDY ESCAPE-BOARD

BY E. F. ATWATER

The writer was long skeptical in regard to the bee-escape, but for some years has been a convert to its use for removing comb honey from the hives. We formerly made a practice of putting three to six supers above each escape, but found that there is likely to be some fighting when supers containing many bees from several colonies are piled above a single escape-board. Too often the escape will be clogged with dead bees, and the supers will not be free from bees when we wish to load them on the wagons for hauling home.

When the supers are from one colony it is usually safe to put as many as necessary above a single escape. Possibly some of the clogging has been due to death of some of the bees from suffocation.

The chief objection to the Porter escape, in the past, has been that it was not made double, like its European imitation, so as to allow more bees to pass, and cut in two the liability of clogging; but the new double Porter escape solves the difficulty and is very satisfactory. We had heretofore used the escape but little for removing extracted honey from the hives, but are now satisfied, after trial, that where it is possible to be at a yard several hours, or over night, before beginning to extract, it will pay well in several ways to use the escapes in order to provide all the supers of honey that can be extracted in the morning. This is especially important here in the West, with its cool nights and mornings. When brushing and shaking bees from the combs for the morning run, the bees become greatly aroused, which is not very agreeable to the help or to neighbors.

Afternoons there is usually no difficulty, and it remains to be seen whether it is worth while to use the escapes for the afternoon run, altho our helpers have formed a decided opinion in the affirmative.

When removing comb honey we prefer to remove all burr-comb from the supers before putting them above the escapes.

In our practice I usually go along the rows, examine the comb-honey supers, and stand on end at the rear of the hive all supers ready for removal. Another man follows and scrapes off all burr-comb (worse and more of it here in the West), while a third man puts them above escapes and sees that all are tight and lids closely fitted to prevent robbing.

For taking off extracted honey we believe that the "new" ventilated escape-board, made chiefly of wire screen, is quite an improvement; but it is a mistake to suppose that the honey from supers so removed will be nearly as warm as when the bees are brushed from the combs. It is the actual contact with the warm bodies of the bees that is the chief factor in keeping the combs warm. When using the escape beneath two bodies of extracting combs crowded with bees it is particularly desirable that the escape be doubled—that is, that it have two sets of springs.

The idea of the ventilated escape-board is not so new as might be supposed. The old La Reese escape embodied that feature, and in actual use it is second only to the Porter.

We have several uses for the ventilated escape-boards, and find them so useful that we shall make many more of them.

For moving bees, in weather not too hot, and where circumstances make open moving undesirable, simply tack a ventilated escape-board on top of the hive, or one above and one below.

We carry a few of them with us at every trip with the wagon; then if we find a foul colony a screen is tacked above, the hive stapled ready for moving, and the entrance closed. We leave the ventilator open. Then the last thing we do at that yard is to close the ventilator and load the diseased colony on the wagon, when it goes home, where it can be watched and treated safely.

When the swarming season comes, there are several plans involving their use. A

method which has always worked well with us is as follows:

For extracted honey, take out the escape and put in its place a piece of queen-excluding metal. Find the queen in the colony which you fear may swarm, and set her, with the frame of bees on which she was found, after destroying all queen-cells, if any, into a new hive-body. In the place of the frame removed, put an empty comb into which you have poured some water. Put the escape-board over the old colony in place of the lid and nail a strip of lath over the entrance. Now put your new hive, containing the queen and her frame of bees and brood, on the escape-board, and fill out the hive either with worker combs or with frames filled with full sheets of foundation.

There must be an entrance to the upper body. This we provide by opening the

ventilator which we have in all bodies, but may be provided by shoving the upper hive forward, then laying a strip at the rear. In ten days you may take away the lower hive of brood, which has been well cared for by just enough bees returning thru the zinc. If you wish increase, set off the lower hive and give them a queen. The brood is all sealed, as in the Alexander plan. Or the brood may be divided among nuclei which you wish to build up.

If no increase is desired, the hive of brood may be left below until all bees have hatched; or at any time after ten days from treatment it may be put above for an extracting-super, after destroying cells, if any. A few colonies may prepare to swarm a second time, when the process may be repeated to advantage.

Meridian, Idaho.

LAYING WORKERS CAUGHT; A LOT OF 'EM

BY M. JOHNSTONE

Mr. Chadwick, on page 837, Oct. 15, states that he has never seen a bee known as a laying worker. In the same note he expresses a doubt as to plurality of laying workers, and also doubts that any one knows. Now, I wish to take issue with him right there. There is also the biological issue, as Mr. Chadwick, page 841, of the same issue, states his disbelief of a developed drone without fertilization. As to the latter point I cannot see that there could be a possibility of fertilization where there is a multiplicity of laying workers. In fact, my experience leads me to believe that practically every laying worker in a bad case of a colony developing laying workers is likely to possess the power to lay.

To the end that every one interested (and what lover of insect life is not?) may observe the phenomena for himself, let me relate what I saw. The science of bee life was new to me, and one day I observed in a small nucleus a number of eggs in several cells. I could find no queen. I searched every comb carefully for her, and in the process of searching I observed that some cells contained a large number of eggs. I devoted the afternoon of that July day to observation of that colony.

I don't know just how the inspiration came, but it struck me that the laying worker or workers being short of room might lay again in the same cells were the eggs removed. I did so with a pin, emptying several cells. Then the comb was replaced. I lifted it gently out in possibly ten minutes (I am not sure of the time),

when, lo! I caught a bee in the act of laying. I crushed her and removed the eggs and replaced the comb. After a short time I gently removed the comb again and caught several laying again. Again the same result was obtained—a third time.

I certainly saw these, and reported so in GLEANINGS at the time. I believe, also, that any one sufficiently interested could perform the same experiment with the same result.

I am writing this to induce others to try it next season, and I hope they will report success or failure.

Given a bad case of laying workers, remove the eggs from several cells; return gently; remove in ten or fifteen minutes, and the laying workers may be caught in the act. Of one thing I am certain—you will never forget the appearance of those discovered in the act.

Cayuga, Ont.

[There is probably not one beekeeper in a thousand who has ever actually seen a laying worker. Unless one neglects his bees there probably will not be found a colony of laying workers in the apiary. When a colony is queenless for a month or so, it may or may not develop a case of laying workers. With regard to the question whether there are more than one or two laying workers to a colony, that question was settled long ago. In back numbers of GLEANINGS, and, in fact, in the *American Bee Journal*, there is any amount of proof to show that if there is one laying worker in a hive there may be many of them.—ED.]

Heads of Grain From Different Fields



The Backlot Buzzer

BY J. H. DONAHEY

Make your own hives if you will, but don't try to make one out of a grocery-box with a meat-saw and a claw hammer.

Winter Pictures

BY GRACE ALLEN

Gray clouds that creep across the sky;
Grim icebergs haunting northern seas;
A far-off war where countless die
And men in mountain passes freeze;
The city streets, a frosty glare
Where huddled poor folk cough and wheeze;
The country, desolate and bare,
Where winds may stalk it as they please;
And while they howl—a dismal choir—
Within a cottage hid by trees,
A man sits by a glowing fire,
Reading a book on bees!

Wintering on Two Sets of Combs

I have wintered my colonies with two sets of combs ever since I kept bees. I use ten and fourteen L. frame hives, some single and some double-walled. I put a zinc sieve under the single-walled hives to let the dead bees and dirt drop out of the combs. I want little honey in the bottom combs, and I want six combs of solid honey or an equivalent amount in the upper hive.

I pack dry empty combs as tightly as I can against the side of the hive. Then I

lay three or four half-inch strips across the top of the combs to give the bees a passage between the combs; put the matting from tea-chests over them, put a box on top that telescopes over the top of the hives an inch, and fill it with six inches or more of dry leaves or planer shavings. Dry wheat chaff is the best packing material I have ever used, but I cannot get it here.

Where the entrance is the full width of the hive I stop up the middle, leaving about 2½ inches at each end open, and put boards in front of the entrance so that light cannot get in to call out the bees while it is still too cold for them to fly.

My top-bars are ¾ inch thick by 7/8 inch wide. I think the thick top-bars would not be suitable to winter bees in double-story hives. In cold weather the bees would not move up thru the narrow opening between the frames over the amount of wood they would have to cross.

New Hampton, N. Y. E. D. Howell.

The True Boneset

Gleanings for Oct. 15 contained some excellent illustrations of wild flowers noted as honey producers. One, called boneset (*Eupatorium perfoliatum*), is not boneset, *Eupatorium perfoliatum*, but is another species of eupatorium. Here it completely covers all closely grazed pastures, lying on wet black lands, and is an important honey-plant some seasons.

Boneset grows only in the vicinity of springs, in sandy stray spots; has but few flowers, and bees do not seem to work much on it. The stems of boneset seem to come thru the leaves like the red honeysuckle. The leaf has no petiole. For reference I refer you to Lloyd library, Cincinnati, Ohio, which I believe is the most complete collection of botanical and allied subjects in existence.

Elk City, Kan.

Dr. J. T. Blank.

[Mr. Crane has called attention to this in his department.—Ed.]

Introducing Queens: Are They Known by Their Odor?

In an editorial headed "The Smoke Method of Queen Introduction Not Always Successful," in the first September number, you say "Oversmoking or undersmoking will lead to failure." I believe you are wrong. You might easily fail by not smoking enough, but not by smoking too much.

I have smoked the bees in a particularly savage colony until half of them were on the floor in a state of stupor, and the queen with them for all I knew, but she turned up laying all right. The bees were none the worse, so far as I could see.

I always use plenty of smoke. I have used this method for thirty years, with one

variation: I do not run the queen in at the entrance, but drop her among the bees at the top of the hive. Then I am sure that she is right in the thick of the bees and smoke.

I have just been thru a lot of hives that had queens given them by the smoke method, and the queens are all laying—not one failure. I think any failures you have had were caused by not giving enough smoke.

Major Shallard.

South Woodburn, N. S. W., Aus.

Carrying Hives in a Touring Car

I have used my five-passenger automobile to carry empty hives, combs, etc. I have four leather straps made with buckles, the straps of the right length to fasten two hives on each running-board.

I next remove the back-seat cushion, setting two hives crosswise on the seat. Then by removing the foot-rest I set two hives lengthwise on the floor, and then tier the four hives as high as I think best. By running a rope around them it makes quite a compact pile.

If you follow this plan and want a neat-looking load leave the back curtain and the top on the machine. If one does not have an old car on which a special body can be fitted, a new car can be used in this way for carrying quite a load. I can carry 22 to 28 hives, by using all the room except the driver's seat.

Colo, Iowa. D. E. Lhommedieu.

Winter Protection in Virginia

It began snowing here Dec. 11, and the snow was 18 inches deep in less than fifteen hours; then it cleared up and turned warmer, but not warm enough for the bees to fly. On the 13th the wind blew hard and cold, and I noticed a few dead bees in front of one of my hives, and the next day I found more dead ones, and among them was the queen. I took the cover off, thinking all of the bees were dead, and was surprised to find a nice cluster of bees right over the entrance, and they seemed to be in a normal condition. The cluster was a good-sized one, as it covered the ends of six frames, and they had a large quantity of stores. I have been noticing a restlessness about this colony all the fall and winter. I haven't any of my bees packed, but have sacks between the double telescope cover.

Do you think it would be profitable to pack bees in winter cases in this locality? What do you think was the trouble with this one colony?

Stockton, Va. Francis W. Gravely.

[In localities similar to this it has been customary to provide no extra packing except what could be inserted outside the combs. It is impossible to give a definite answer as to the advisability of winter cases. They might prove an economical in-

vestment one year and an expense another year if the extra labor is considered.

These bees coming out may have been old ones that could not live any way. Or the stores may have been to blame. This, however, would hardly explain the death of the queen. We are inclined to believe that the death of the queen was incidental, and not connected with the disturbance.—Ed.]

Bees Dying Off by Handfuls during Mid-winter

My dear Mr. Root:—My bees are dying off by the handfuls. Can you tell me what is the matter and what I should do? I am wintering them outdoors in single hives, but where the wind does not strike them. The hives are new, and my bees are kept dry. I left plenty of honey for them to winter on, I thought.

How do you feed bees in winter?

Clintonville, Ohio. E. W. Mendenhall.

[We can't imagine what can be the trouble unless your colonies went into winter quarters too weak. In the fall there should be at least eight or nine frames well covered with bees, and, better, the full ten frames. It is possible that last fall the queen died, and the colonies got weaker and weaker, and the cold wind that has been blowing has possibly been too much for them, and so they are dying by the handfuls. If there are no young bees in the previous fall the old bees would begin to die off very rapidly.

It would do no good to feed them now, and the only thing we can suggest is that you take the bees as they are into your cellar, making the cellar dark. This may be the means of saving them. If you have two or three colonies that are weak unite them together after you get them into the cellar.—Ed.]

Long Cases for Wintering a Row of Hives Not Practical

Information has been requested in regard to winter packing-cases; and altho you ask from those having experience with both kinds I make bold to state my experience, altho I have used only the two long kinds. Some 35 years ago, when lumber and packing were cheap, I used to pack all my bees; but I simply could not keep house and have any more than three hives in one box. When I had four, five, or more hives side by side in one box the way the inside colonies butchered one another in the spring was simply scandalous. I even painted large blotches of different-colored paint over the entrances. This helped somewhat, but did not cure the evil entirely. I sawed all my long boxes in two, so there would be no more than three hives in a box.

I consider two hives well packed worth as much as three hives wintered in the cellar.

West de Pere, Wis. Paul Scheuring.

[This confirms our statement made on page 921, Nov. 15th issue.—Ed.]

A. I. Root

OUR HOMES

Editor

The land was corrupted by reason of the swarm of flies.—EXODUS 8:24.

CREATION; HOW MUCH OF IT IS STILL GOING ON?

Ever since GLEANINGS was started there has been more or less speculation in regard to the honeybee. Were they originally made just as they are now, or have there been changes? Let me digress a little.

I suppose every one of our readers has been annoyed more or less by the common housefly. When you are especially busy, perhaps writing, a mischievous fly will alight on your hand or perhaps on your nose. You impatiently brush him away, but he comes right back and then you have the same thing enacted over and over again until you lose your patience and make up your mind to kill that particular fly if you can, so as to have a little peace. May be you are running an automobile, or having something to do with it. Perhaps you are stopped in the road away from home somewhere. You are obliged to pull a complicated machine apart more or less. It may be a hot day, the sweat dropping from the end of your nose as you stoop over to twist yourself into a tiresome attitude to get at a defective point. Just at the critical moment a fly gets close to your eye. With greasy fingers you try to drive it away; but it persists in coming back. It would seem that flies do this just to be contrary and because they delight in pestering anybody at a time when he especially does not want to be annoyed by a fly or anything else. We have all heard people talk about "saucy flies," and they really do seem to enjoy bothering one when they find out they can do so. Now, may be I am uncharitable in regard to flies; but I have not got through yet. They seem to have learned just how far they can go and not get hurt. If you attempt to strike them, unless you are very quick, and circumstances are favorable, a bright frolicsome fly will laugh at your clumsy effort. How does it know, or how does it learn to escape almost any blow you can give it with your hand? It cannot have had a very long time to learn by experience. In fact, I am not sure but the fly would behave much the same way the very day it learns to use its wings. It is not human beings alone that it annoys. Every farmer knows how flies at certain times of the year pester his horses and cattle. Of course the horse and cow can brush the fly away with their bushy tail, and they can bite too; but I think the fly dodges and escapes. Now to my point:

For a few summers past, not only the city but the town and country have been waging war on flies; and the number has decreased, I think, everywhere most perceptibly. Some inventive genius, I do not know who or where, has given us the little "fly-flipper," and I have several times thanked God for it, and for the good man (or woman) who invented it. By the way, it occurs to me that something was said in the bee-journals years ago about a wire-cloth paddle instead of a wooden paddle to knock down an angry bee that keeps following one all over the premises. Can any of the veterans tell us anything about it? Over in our home (and it does not matter whether the home is in Medina or Florida) it is a rare thing to see a fly buzzing anywhere in our well-screened rooms. Mrs. Root has the credit for that, at least mostly. Well, at my table in our big office, flies trouble me so much when working on my correspondence that I have been obliged to use sticky fly-paper. This also has been a great boon to humanity. But this summer I have not used any sticky fly-paper at all. I have a very light neat fly-flipper; and now if a fly ventures to get on my hand or face or bald head, I hit it a clip. At first the fly begins his old antics of dodging and then coming back, but when I get hold of the flipper I "get him." At the first clip the fly seems greatly surprised and astonished. I think I have acquired some skill—yes, skill even in my old age, in killing flies just as they approach my table. A very little clip lays a fly out. It takes some time, I admit; but when I am busy reading letters a little exercise does me good. I have got so I can swat a fly every time, even before it gets to work at its old antics, because it does not consider that I now have a new invention to circumvent it. The dodging scheme that he has used, and acquired such skill and proficiency in using, is now knocked out, and the fly cannot understand it. Now for my point:

How many years or centuries has the fly been in learning to dodge a human hand? And while I am about it I might as well ask how many years and even centuries has it taken the *bee* to learn the trade of making the beautiful honeycomb? And will the fly eventually learn to dodge the fly-flipper as it has heretofore dodged the human hand?

Do not plants as well as insects modify their habits by what we may call ages of experience?

Bananas do not bear any seed. May be you have heard bananas never grow from seed; yet growing bananas is one of the greatest industries in the world. We are told that the banana stopped bearing seed because people kept propagating from suckers. As nobody made any use of the seed, if it ever had any seed, it stopped yielding it. In the same way we have a seedless orange, or almost seedless, and other plants have been following along. Now, will the fly learn after a little to dodge the wire-cloth weapon as it dodges a folded newspaper or a flat stick? Who can tell?*

In waging war against redbugs, mosquitoes, and infectious diseases, such as the foot-and-mouth disease, and I might go on indefinitely, it may behoove us to look into this matter a little more than we have done. In other words, did the honeybee come from the hand of the loving Creator with all its wondrous skill? or have centuries of practice, and, you may say, the "survival of the fittest," had something to do with it? And then, again, did this mischievous fly possess the same skill from the creation down to the present time, or did it *gradually* learn the trade of dodging so it might keep on annoying at a time when we wish so *vehemently* he were at the other end of the earth?

My impression is, in closing, that the great Father has for the best of reasons ordained and planned that we should turn in and *help* wherever it is possible to make things better in this busy world of ours.

"THE GREAT ARMY OF THE UNEMPLOYED."

On page 780, Sept. 15, I have some kind words to say in regard to a tramp, or at least one whom the world would call a tramp. I think now it may be well to tell another experience. A few mornings ago a tolerably well-dressed and able-bodied man came to Mrs. Root saying he wanted something to eat. She told him to go into the lumber-yard, that they would give him work and then he could buy what he needed. She did this because I had told her not to give tramps food. Well, because he said he

could not very well work without something to eat she gave him a fair meal. He asked for coffee; but she told him we used postum cereal, and he said that would do all right. Instead of going to the lumber-yard, however, he went to my daughter's, next door, and asked if he could not have some *real* coffee, making complaint about the cereal coffee. Not knowing he had had a fair breakfast she gave him something more. Then he asked if he could not do some work for her. She told him he might mow the lawn; but when he asked how much pay he was to have she told him a man came around once a week and mowed it for 25 cents. He replied that he was not going to mow any big lawn like that for 25 cents, and then he put off. After he had bothered two busy women, and had eaten two breakfasts without charge, he was not willing to work for the regular market price. I "scolded" both of the women for encouraging and putting a premium on the whole tramp business.

Now here is something so *sensible* that I have about decided to have a lot of slips printed; and when somebody writes me a letter about "the great army of the unemployed" I will send them this clipping by way of reply. Read it, and see if it does not just about "hit the nail on the head."

CHATS WITH THE BOYS.

Not enough of him to go round.

I hired two boys. One tried to see how much he could do, and everybody wanted him. There was not enough of him to supply the demand. He was kind and helpful every way, always cheerful, and ready for any job. He is now getting \$1200 a year.

The other fellow tried to see how little he could do. If I sent him to the field to work, he would find a berry-patch and spend a good deal of time there, or loiter under the bushes and try hard to see how little he could do, and now he is hunting for jobs, and the jobs always shy at the sight of him.

I have an old friend about my own age who started out to make his way in the world along in the 50's of the last century. Money was scarce, and work was hard to find, but A. J. gathered himself together and started out. Now, there is a good deal of a boy when he gathers all in and takes the whole of himself along. Healthy, strong, willing, cheerful, honest, with plenty of gumption and common sense, he makes quite a combination, and he is bound to win. A boy mourns because he has no money when nine-tenths of his capital is vested in himself.

Well, A. J. started out. He had \$5 which he had earned by the hardest work. He heard of a job which he could have in about ten days. But if he went to the hotel his \$5 would not last long, so he struck out for the country. He approached a good-looking farmhouse and asked if he could stay over Sunday. "No, sir, this ain't a hotel and we don't keep tramps."

"But I can pay for my board."

"Well, go in and see wife."

He went in and saw a poor over-worked woman and asked if he could stay over Sunday.

"Why, yes, I will try."

The woman had her hands full, and a squalling,

* How many ages or centuries does it require for the fly to acquire the skill necessary to evade the flipper? And, again, do flies and bees remember or inherit the piled-up experience of their ancestors? Do you and I, dear reader, occasionally have glimpses of things our fathers and mothers learned before we were born? Some years ago I visited Waterbury, Ct., and I found there a few old gray-headed people who could tell me where my father passed his boyhood days; and as I looked over the surroundings and tried to recall what he had told me of his boyhood, it almost seemed as if away back in the past I recalled glimpses of the landscape and surroundings; and yet it was the first time in my life that I ever visited the place.

dirty-faced baby was very much in evidence. Having a little candy in his pocket, he picked up the little fellow and quieted him, and soon was on the best of terms with him. The mother started out to get some wood.

"Oh! let me go," he said; and he brought in two good armfuls. When milking-time came she took two pails out to milk.

"Here," said he, "let me have one. I am a good milker."

And so he was on the alert to help all he could. Monday came, and there was corn to hoe, and work in the garden along with the chores, and with outdoor work and helping the overworked woman, he made himself useful all the while.

When the next Monday morning came he asked the man, "How much do I owe you?" and the man pulled out a \$2.50 goldpiece and said, "I owe you so much, and would like to hire you for a year.—*Independent Farmer.*"

POULTRY DEPARTMENT

MY CHRISTMAS PRESENT.

Of all the Christmas presents I have received in over 70 years I do not recall any that gave me more real pleasure than the one I am going to tell you about. It came so entirely unsuspected, it was really one of my "happy surprises." No one of my many friends sent it, for, in fact, not a soul on earth knew anything about it or had a finger in the work of getting it up until it was presented to my astonished gaze when I was all alone out in the Florida woods. I did not even know that long days and weeks were at work getting it up for my especial joy and delight until the finished and complete creation was handed over to me—shall I not say direct from the hand of the kind and loving heavenly Father?

I have already mentioned a Rhode Island Red hen, blind in one eye, that laid right along a year ago thru November, December, and January, when the Leghorns and Buttermereps were moulting and when eggs were 50 cts. or more. Well, I set quite a few of her eggs, and therefore found a dozen or more young pullets, pictures of their mother, when I reached here in November. Sure enough, like the mother they have been almost all laying clear up to Christmas, and, like the mother also, not one wanted to sit until December 14 (altho I was very anxious for some chicks to study and care for as soon as possible) and another on the 23d.

One morning I caught a glimpse of a soft fluffy red hen (or yellow, rather), rushing about for corn and water, with her feathers ruffled up and clucking; but supposing it was the sitting hen of the 14th I thought little about it until I found said sitting hen on her nest with no indication of having been off that morning. Once, later, I got a glimpse of her; but she was off in the woods before I could keep her in sight. I said to Wesley, "We must hunt that hen, for she might have more eggs than she could cover."

We both spent quite a little time, but had to give it up, and I concluded she was

only "making believe" she was "broody," as pullets sometimes do.

Well, on Monday morning, Dec. 27, I went out in the woods alone, thinking I might catch her coming off to feed, and I *did* catch her; but imagine my astonishment when I saw around her a perfect "swarm" of fluffy downy yellow chicks. The morning sunshine came thru the evergreen-trees and shrubbery, and there she stood, a proud and stately mother with her inquisitive brood scattered around her. I tried to count them, but they rushed about in the sunshine at such a rate that I was really unable to decide whether there were 16 or 17; and, to tell the truth, as I write we haven't decided even yet. I made 17 several times; but Mrs. Root declares that her accurate "auditing" shows only 16. Wesley and I finally located the nest and found three infertile eggs, so she must have laid 20 eggs (or 19?) before deciding to sit. From the activity and looks of the chicks she must have hatched them on Christmas day, and neither she nor the chicks had had anything to eat except what she scratched up in the woods for the lot, until the third day. They are now on a "bread-and-milk" diet, located right near our bedroom window, and we are going to try hard to keep the "happy family" entire.

By the way, there are quite a few "chicken men" (and women), as I happen to know, who read GLEANINGS. Well, may we not thank God that there is a place in the United States where (when we are getting old) we can go and see a hen steal her nest, sit on twenty eggs, and hatch 17 (or even 16) at *Christmas time*?

POULTRY-KEEPING IN FLORIDA.

The letter below explains itself:

Mr. Root:—We (our party) take the liberty of enclosing some questions touching the poultry business in Florida. Some of us expect to go down soon. We know that you are well conversant with the situation and that you are a Christian, and

hence give us, as far as you know, some reliable advice. J. H. PARKER.

Magnetic Springs, O., Nov. 16.

Is there a demand for crate-fed poultry in Florida?

There is usually a very good demand, especially during Thanksgiving time and the holidays. My neighbor, Mr. Abbott, told me of selling fat *old hens* for over a dollar each, and they were not "crate-fattened" either. I think he delivered them at the large hotels.

What variety of poultry seems best adapted to Florida? Our idea is more particularly for egg production.

As you know, all the great egg-farms use Leghorns, both north and south; but I think a change is coming. Some time ago I got a few Rhode Island Reds so as to have some hens that would sit. Well, when the Leghorns did not lay at all, say in November and December, I had one blind "red hen" that laid, without wanting to sit, all through November, December, and January. I have now quite a few of her chicks, and they are giving me fifty-cent eggs, just like the mother.

Take a laying hen, put her in Florida, then take her to Medina, O., at which place will it cost more to keep her?

If you shut her up in both places it will cost more in Florida on account of the higher price of grain. If, however, you give her the run of the woods, as I do, it would take *less* grain here in Florida, for in Ohio she could not find feed in the woods in winter as she does here.

What do you think of a White Indian Runner duck-farm for Florida?

I am sorry to tell you that Florida people care little for ducks or duck eggs. When hens' eggs are forty or fifty cents, duck eggs sell very well at a little less; but in the spring no one seems to want them. Duck eggs are larger, and ducks lay right through moulting time, and I like them just as well as hens' eggs, especially when the ducks are *grain fed*. But people *will* have their notions.

Is there any good reliable poultry concern on the west coast of Florida from which one could buy reliable stock?

The best I can do is to submit the two advertisements below, which I clip from the *Florida Grower*, published at Tampa:

Single-comb White Leghorn and Rhode Island Red yearling hens, pullets, and cockerels, at \$1 each. Jersey Stock Farm, Trilby, Fla.

Single-comb White Leghorns. Pure bred, and mated for highest egg production. A year's test; the trap-nest the judge; then the best, then matings. Matings with records up to 245. Day-old chicks and eggs for hatching. None better. Wm. B. Moore & Son, Olga, Fla.

I know nothing of the parties above. You might also write Crenshaw brothers, at

Tampa, who deal in poultry-supplies considerably.

Do you consider Florida a good place to start a poultry-farm? and would you advise around and about Bradentown for the same?

Around Bradentown is a very good place while eggs are worth 50 cts. a dozen, as they are now, December; but last April they were down to 15 cts. for a short time, and not wanted at even that price. As yet, there is little or no "cold storage" for eggs (if I am correct) in any part of Florida.

What are the best things to grow for feed stuff for one's poultry in Florida, assuming that one has six or seven acres?

Dasheen, cassava, turnips, radishes, cabbage, lettuce, oats, and rye, to be fed green, and no end of other things. See back numbers of our journal.

What is a good thing to go with poultry in Florida?

I would grow potatoes, at least so long as you can swap a bushel of potatoes for a 100-lb. sack of corn. Raising green stuff for the fowls saves grain, and helps the egg yield.

Do you think that there is more profit in the raising of poultry in Florida than in Ohio?

That is hard to answer. If you feed grain, it always costs more in Florida than in Ohio; but a great part of the year *eggs* bring more here than in Ohio. Again, as I have already said, there is a big saving down here in the way of buildings, brooders, etc. Altho others down here may differ, I would and do raise chickens without any lamp-heated brooders.

In starting an egg-farm would you buy in Florida or in the North? By this we mean the stock to start with.

I would buy here to save expensive transportation unless it would be a few choice fowls and eggs so as to work into a good strain.

Is it possible to keep down the lice, insects, etc., in Florida?

This is easily done. If the roosts, nests, etc., are sprayed a few times a year, and the droppings are swept up daily, and carried away, we rarely find a trace of poultry insects, or parasites of any kind.

Is there any particular kind of house that you advise for poultry in Florida? We allude more particularly to a laying-house—an expensive house to start with. We aim to keep 500 laying hens later on, or part ducks—that is, Indian Runners and part hens, such as may seem best.

In southern Florida I would almost say, "The *less* house, the better;" in fact, I was at first quite successful with all of my poultry roosting in trees. There were some objections, however. Big owls sometimes take grown fowls out of the trees; and when you want them it *may* take a very

long ladder to get them. Besides, when we do have a bad storm, the chickens seem to prefer a shelter. Our five houses now have a good roof of shingles or roofing-paper; but the walls are mostly only poultry-netting, and even then the poultry prefer the trees during very warm weather. A lot of money is *worse* than wasted all over Florida in *tight houses*.

Do you advise the yard or colony plan for Florida?

If you want eggs, give them as big a run as you can. Our Ohio experiment station has just put out a leaflet showing not only more eggs but a considerable saving in feed by giving a wide range. Down here a piece of wild land seems to suit the chickens. We give an average of 100 fowls a run of three acres of trees, bushes, or weeds.

HIGH-PRESSURE GARDENING

APPLE-GROWING IN THE GREAT NORTHWEST,
WITH SOME KIND WORDS SPRINKLED IN
HERE AND THERE.

Our good friend Peter Henderson made quite a sensation years ago by writing a book called "Gardening for Profit." Later on he gave us another book called "Gardening for Pleasure." The two books have had a great run, and are selling yet to a considerable extent. The good brother who sends us the article below recommends "gardening" with a *four-horse team* and an appropriate cultivator, and he rather makes light of "gardening with a hoe." When he gets to be seventy or eighty years old he may have more respect for the humble occupation of gardening with a hoe.

BREWSTER FLAT, THE ONLY SPOT IN WASHINGTON
WHERE WE TAKE SWEEPSTAKE PRIZES ON APPLES.

Dear Mr. Root:—Another year has rolled around, and it still finds us on good mother Earth, and still living in the land of plenty and peace, the United States of America. You, undoubtedly, would thank God for this peace blessing, while I would thank also our President for his kind but forcible answers that "turn away wrath."

We are a long distance from each other—you in the South, where it must be warm, while I am in the great Northwest where it ought to be cold, and is cold. This morning it was two below zero, with about a foot of snow. In the mountains, eight miles away, it was ten below. This at this time is not much difference; but later it is generally twenty to thirty degrees colder in the mountains than here.

This is certainly an apple country, and the only pest we have to bother us is the ticks. If they once get on us, and begin to set in their prongs, they stay; and if pulled off they leave these prongs in the flesh, making a spot that itches awfully. But when we begin to feel one starting in on us a little turpentine, kerosene, or grease rubbed on the spot will kill the tick; and when dead it will let loose. They get on the horses; and if let alone until they develop they become as large as half an inch in diameter, filled with blood that they suck from the body. I understand that California has us beat "forty ways" in the abundance of ticks.

Over on the other side of the mountains, at Seattle and on, it seldom freezes, so by going some 70 or 80 miles west we must have nearly as warm and pleasant weather as you do in Florida. Here we have abundance of snow in winter, and rather dry in July and August; but at other times we have rain enough to grow an abundance of crops.

The great cry here is for irrigation-ditches, and we have them too. Millions of money are spent to

get water on to the land, and, of course, it is fine to be able to water when needed. But the land and crops are abused by use of *too much* water. This is because of people not using good judgment in irrigating. The overhead system is going to be the popular one, because then all parts of the land get the same quantity of water, and the land does not have to be leveled.

I noticed a letter in GLEANINGS some time ago from a Socialist. I thought he was very ungentlemanly and was lacking the gentle spirit now characteristic of the greatest nation on earth. Covetousness is the desire of the ignorant and indolent. The men who want nothing but what they earn are the very bone and sinew of this nation. They see opportunities on every hand, and simply say to themselves, "We do not want our neighbors' house or wealth, but are able to go out and earn a house or wealth just like my neighbor's or better." This principle shows equality, and a generosity that is progressive. But the man who advocates division of wealth and its comforts does not understand the true principles of manhood, and is drifting into the parasite stage; and if we all would drift along that line we should become more helpless than our next best associates, the animals. The true American type of man will never call for a division of wealth, but will assert himself and take another spot on the broad acres of the United States, and there dig out a comfortable fortune too. The true American type of manhood would scorn a division of wealth as an insult. But the man who would take a division of a neighbor's goods would set an example that, if all indulged in, would make us a beggar nation.

You, Mr. Root, are setting one of the best examples of industry. You at the age of 75 are doing more good hard work than all the great army of hoboes in this nation. You dig in the garden, supplying not only yourself with luscious fruit, but hand them around to the neighbors. You *keep busy*. You find plenty of work, and you always will as long as you live. Industry is the making of this nation. Let every hobo, those that would call for a division of wealth, look to you in your industry and be inspired both of God and for the good of humanity. With the example you are setting, if followed out by every one in our land of plenty, not one person in this peaceful nation of ours would be in want. They would all be in comfortable homes, and plenty to eat and to wear. They would all be law-abiding citizens, and not be in the way of others. The man that would suggest a division of such industry should begin to think how they could most humbly apologize.

The few members of our human family are not great because of their religion or wealth, but because of good and wise deeds done for humanity.

To keep well depends on how we treat ourselves. We are really our own doctor. Eating the right kind of food and the right quantity with variations will keep us well all the time. Working or playing

must be indulged in for exercise, but must be indulged in only to correspond with our physical strength. Many a man has shortened his life by overdoing.

It "makes me tired" to hear you speak of that hoe. I never could do anything with a hoe; but when it came to cultivating crops with horses, I was and am strictly "on the job." I am inclosing you a cut of my four-horse apple-orchard cultivator that will do more work than a thousand men with hoes day after day. I have orchards of my own, and do lots of contracting to grow orchards for non-residents. This year I handled alone 195 acres. We cultivate these orchards ten times in five months. This would make 1950 acres to cultivate once over, or at the rate of 17 acres per day for 130 days in the 5 months. As my capacity is 20 to 25 acres per day, you can readily see that I would have some spare time to rest besides the rest on Sundays. Not only cultivating the ground, but I must drive within one to three inches of the trees every time I pass a tree, and not bark it. There are about 100 trees per acre. Here are four horses trained so perfectly that it is possible to do just such close work. I can take a weed out from close to a tree with this monster cultivator as easily as you can with your "little hoe." With cultivators made for the purpose, corn, potatoes, and all garden stuff, if planted in rows the right distance apart, can be cultivated more perfectly than even you, Mr. Root, could possibly do it with the hoe. Not only better work is done, but a thousand times as much more work is done, with a larger crop. Not one bit of hand hoeing for me. Give me the grand noble horses hitched to a good cultivator, and it is simply play to raise any kind of crop on good soil. My horses are so trained that I could send them over the field without me to drive them, occasionally, and the work would be done just the same. But soon they would miss the tension on the lines, and become lost. These horses are a part of myself to a certain extent. They come at my call, and call me when they want water and feed. When turned out in the pasture for a day or so, and they do not see me, when I go after them they are as tickled to see me as a dog is his master. This cultivator cuts as wide as ten to twelve feet, and requires four-horse power. I am doing two men's work.

Brewster, Wash., Dec. 14. V. W. CLOUGH.

TILE DRAINS, AND TILE MADE OF CEMENT IN PLACE OF CLAY

In the closing chapter of our book on tile drainage I made mention of the bad results down in Florida that came from home-made tiles made of cement and sand. This question has come up several times, and I have been told that well-made cement tiles answer all purposes, and stand all kinds of weather here in the North. However, I am just in receipt of a bulletin the heading of which reads as follows:

DURABILITY OF CEMENT DRAIN TILE IN ALKALI SOILS.

The closing remarks of this bulletin are as follows:

Drain tile manufactured in a manner as described for cement mixtures not leaner than one part cement to three parts of aggregate are apparently unaffected structurally when exposed for one year in operating drains in very concentrated alkali soils, similar to any of those included in the investigation.

Drain tile made from cement mixtures leaner than 1 part cement to 3 parts of aggregate should

not be used in localities where the character of the alkali and concentration is similar to that found at the site of the experimental drains at Grand Junction, Colo., Montrose, Colo., and Garland, Wyo.

Drain tile manufactured in the manner described of 1 part cement to 4 parts of aggregate, the leanest mixture used, is apparently unaffected structurally by exposure for one year in an operating drain in concentrated alkali soils similar to those found at Fort Shaw, Mont.; Sunnyside, Washington; Yuma, Arizona, and Roswell, N. M.

Other than the above, no very general conclusions should be drawn from this investigation until the results of further tests are obtained. It is anticipated that this report will be amended from time to time as the results are obtainable.

The department would be pleased to receive information concerning the behavior of the concrete exposed to concentrated alkali soil which may come to the attention of engineers or others interested in the use of concrete under these conditions.

Washington, D. C., July 12, 1915.

You will notice that in the above no mention is made of Florida soils; and so far as I am aware we have no alkali there to trouble us; but for some unknown reason all the cement tiles in our neighborhood, in Manatee County, have dissolved or rotted out sooner or later. Mine were mostly gone inside of a year. But I think that Mr. Rood's, or at least the most of them, did fairly good service for two or three years; and it is very likely that neither his tiles nor mine were made as strong in cement as mentioned.

"EFFICIENCY" (AND ECONOMY) THE "SLOGAN."

We clip the following most sensible suggestions from *The Friend*, published away off in Honolulu:

WAR AND FOOD.

Reports from Germany tell the news that, because of the cutting of supplies from abroad, the nation's men of science have been compelled to give attention to the food problem in a way never before demanded. In consequence, new sources of food and the entire question of the amount and character of sustenance are being gone into with German thoroughness made all the more effective by the very pressing demands of the hunger situation. Out of this will come information of exceeding value to the world. In every wide-awake nation today there are numbers of people who are revising their habits of eating and drinking. Stimulants are being thrown to the bats and moles; tobacco and other narcotics are being discarded; meat consumption is being radically curtailed, and a regimen in accord with the demands of health and highest efficiency is eagerly sought. One of the greatest blessings which the war will confer, therefore, will come to these enthusiasts for being at one's best from Germany after the exhaustive study and experimentation now being conducted shall have crystallized into scientific knowledge. All who believe that extravagance in eating and drinking are marks of the beast in human nature, and directly prevent one's highest development, will hail these results with enthusiasm. Economy in food is the great demand of our day and nation, and it is good to think that this war, if it had to come, will help men to live more healthfully as well as more brotherly.

HEALTH NOTES

PHYSICAL CULTURE—SOMETHING IN FAVOR OF IT, EVEN FOR FARMERS.

In your potato book you say a few things to the effect that physical culture is unnecessary with farm work. I worked on a farm from the age of 12 to 16 (am still there), and at that time I could not do things that others stronger than I could. I took up physical culture, and in one or two years I was their equal, and in a few things stronger.

JOHN H. ROSSER.

Tambourine, Queensland, Aus.

My good friend, I think that what you allude to is where I spoke of lifting a bushel of potatoes to pour them into a sack that was hung on a wheelbarrow, etc. That kind of exercise seemed to bring almost every muscle of my body into play more or less; and by the time I had sacked several hundred bushels in that way I had gained in weight, and you may be sure I gained in appetite. At the present time I find it a benefit to go through a part of my physical-culture exercises every morning just before taking my bath. As soon as I am out of bed I swing my arms until I am warmed up enough so I do not mind taking a bath in moderately cool water.

WOMEN DOCTORS FOR WOMEN.

Mr. Root:—You say on p. 519, July 1, 1914, "No doctor is qualified to treat husbands and wives until he is a married man himself. . . Perhaps I had better modify it by saying that any doctor 25 years old should be married, and should have some children. . . . I would suggest that his wife go with him, especially when he has women patients." To all of which I devoutly say *amen!* But why not go one better, and advocate women doctors for women? Do you know that, in my opinion, men doctors for women is one of the most disgusting things we could have, and one of the most debasing things for the women. Do you know that women being treated (and young girls too) at our public hospitals are exposed to the gaze of a body of *male students*? Could you imagine any treatment which would destroy her natural modesty quicker? I have even heard (and I have no reason to doubt it) that at one hospital in Sydney women are confined on a warm slab in the presence of a large class of students. Can you imagine the feelings of these poor creatures at the time of their greatest tribulation being subjected to this treatment? I am told that this is unavoidable, as the students must learn; but in my humble opinion they need not be male students.

Then, again, the percentage of bad immoral men in the medical profession is just as great as in any other walk of life; and the amount of harm done in family life is very great. Why run the risk of this at all when women doctors can do the work just as well? If you helped the cause of the women doctors it would help very materially to further this very necessary reform.

MAJOR SHALLARD.

Many thanks, my good friend, for your very excellent and kind suggestion. It is probably true—at least at the present time

—that our most able and efficient physicians are men; but there is no reason, as I see it, why a woman doctor, when she has charge of a critical case, should not call in an able male physician to consult with. Your suggestion (and how true it is!) that our doctors should be the most moral men—next to the clergy, in fact—reminds me there are quite a few who do not hesitate to use their position as a means to commit foul crime. During my short life I have known one or two cases where the family physician broke up a family; and I have come in touch, also, with doctors who gave the vilest counsel and advice to young men and boys, that one can well imagine. As an illustration, the family physician, one whose office is to lead the way to health, is too often a user of both alcoholic stimulants and tobacco. The papers of late have been declaring most vehemently that no drunken man, or, for that matter, *drinking* man, should presume to run an automobile. But what is an automobile compared with the human form? Think of a surgeon, with his keen lance, *taking* a drink before he undertakes an operation!

COUGH MEDICINES—A CAUTION.

When we gave a list of recipes for cough medicines made of honey in our issue for Oct. 1, the recipes were first submitted to a competent physician. He replied that there was nothing in them that would probably do any harm, but did not commit himself any further. I now notice that one recipe calls for lobelia. When I first began to go to school I was troubled every winter more or less with severe coughing-spells. They not only disturbed me, but sometimes they threatened to disturb the whole school. I think our family physician told my mother to give me at such times a little lobelia tea, sweetening it enough to be pleasant to take. When the cough was on I would take just enough lobelia to make me begin to feel a little sick at my stomach. The cough then would let up. Later on I carried lobelia pods in my pocket and would chew a small fragment when the cough began to trouble me. Below are some valuable suggestions, and a caution in the use of the much advertised "cough lozenges."

MEDICINE TO ASSIST PUBLIC SPEAKING.

The honey-in-cooking number had under Health Notes a pretty strong article against patent medicines; but in its list of recipes there were eight or nine for cough medicines. It looks as if the idea was that cough medicine is a sort of medicine that

does no harm. That isn't true. My father was a clergyman. Hoarseness used to interfere sometimes with his voice in the pulpit. He took cough lozenges to clear his throat, and he carried them into the pulpit. After years, when he was beginning to be dissatisfied with the working of the lozenges, a man sent him circulars and samples of a other kind that delighted my father by their efficiency. He bought them by the big box, and had them for a family medicine. At length his voice got so that he could not depend on it even with that help, and he felt it necessary to consult a doctor in the matter. The doctor told him that he had been ruining his throat with cough lozenges—first the milder sort, till those got him into a condition where they no longer took effect, then the stronger until they had about finished the job. His only chance, the doctor said, was to give up lozenges of any sort. By following that advice father's throat got back strength enough so that he went a few years more, and rounded out a good length of service; but when he did break down it was his throat that went first. *Moral*.—What is true of medicines in general is true of cough medicines.

I do not mean to decry the legitimate use of medicine. In many diseases there is some symptom which interferes with nature's work of curing the disease, so that if you knock out the symptom with a drug it leaves nature a better chance to work; and a cough is very apt to be such a symptom. Also there are cases where nature's curing is not enough without some help; for example, the lockjaw microbe cannot live long in a man's body. It always dies before the man does, so that in a sense the germ-killing power of the human blood has successfully cured the disease; but the microbe leaves in the blood so much of a strychnine-like poison that the man dies of that; so he has little chance of life unless you can either give him a dose that will kill the microbe quicker than the blood kills it, or else give him an antidote for that poison. So drugs have their proper use, though the best doctors are apt to be those who trust most to the self-curing power of the body. But I doubt if there is any exception to the rule that it is dangerous to make *habitual* use of any medicine, great or small, without the more or less continuous oversight of a competent doctor.

As to those recipes for cough medicines, I should think it safe to guess that the ones which contained least of medicinal ingredients would do least harm. Chambers' Encyclopedia gives a list of two or three dozen cures for cold that are used by different people, and then says, "There is no doubt that colds do get well under all these treatments;" but it thinks most of those colds would have got well quite as well without the treatment.

Some folks, sad to say, are so in the habit of dosing that they feel more as if they were going to get well if they are "taking something;" so it does them good to give them something that has a reputation but has no medicinal qualities, such as sarsaparilla or ginseng. Honey with something to make it taste bitter ought to be good for such. As to any possible medicinal effect of the honey itself, a medicinal quality that is not strong enough to keep the article from being wholesome as daily food is not strong enough to worry over.

The case is different with antiseptics to hasten the cure of external sores, wounds, etc. Such can do no harm to the constitution unless very badly misused. Honey ought to be an efficient mild antiseptic under any circumstances where it would not get diluted by watery discharges; but such circumstances would be comparatively rare, so without doubt the propolis salve that was recommended a few months ago would do better service in general.

STEVEN T. BYINGTON.

,Ballard Vale, Mass., Oct. 14.

The suggestion in the above, that even if a drug *does* effect a cure for that particular trouble, there is much danger that it may do harm somewhere else in the system, resulting in proving the truth of the old adage that the remedy may be worse than the disease. And I heartily indorse the sentiment about the habitual use of *any* medicine being dangerous; and I am glad to see the statement that "sarsaparilla" and "ginseng" really have no medicinal qualities, and I think the list might be greatly extended.

OVEREATING, ESPECIALLY FOR ELDERLY PEOPLE.

We clip the following from the *Scientific American*:

In conclusion let me warn you of the dangers of overeating. Most of us eat too much. We would do well to follow the advice of the great English physician, George Cheyne: "*Every wise man, after fifty, ought to begin to lessen at least the quantity of his aliment; and if he would continue free of great and dangerous distempers, and preserve his senses and faculties clear to the last, he ought every seven years to go on abating gradually and sensibly, and at last descend out of life as he ascended into it, even into the child's diet.*" In short, why do men over forty break down? Indulging their appetites!

Amen to the above. Especially let me put additional emphasis on the fact that as we grow older, and begin gradually to let up on both physical and mental work, we should let up on our eating—especially on eating solid and substantial food toward the close of the day; and as we go down to our second childhood let us by all means adopt the author's idea.

Just a word in regard to the matter of sleep. The first days and even months of childhood are largely devoted to sleep; but as we get older there seems to be less need of it. Now, when our faculties begin to be impaired by age my experience is that we need sleep oftener. Occasionally I do some work in the garden, or possibly somewhere else, by which I get pretty well tired out. At such times I can neither work nor even read intelligently. But a twenty-minute rest and good sound sleep gives me all the vigor and strength of both body and mind that I have in the early morning. In this way we cannot only take care of ourselves, but lend a helping hand to the good people around us, not only when we are up to eighty but even ninety.

In recommending sleep, please do not get the notion that I advise anybody of any age to mope around lazily. Sleep only when you are tired out and fatigued by some sort of work.



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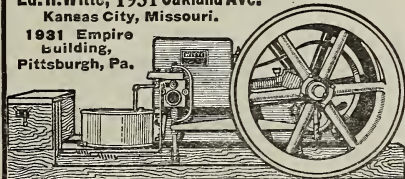
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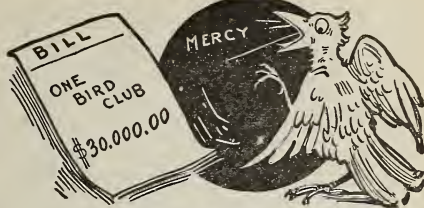
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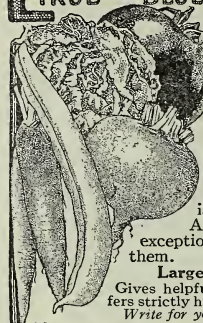
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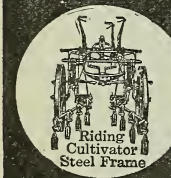
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Bucket, Barrel and Power Sprayers
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Combined Drill and Wheel Hoe



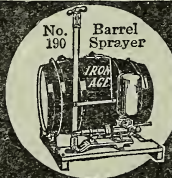
100 per cent Potato Planter



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Seven-and-a-half foot Weeder



No. 190 Barrel Sprayer

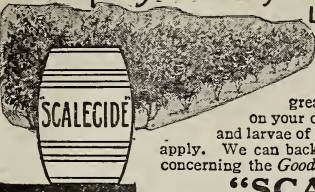


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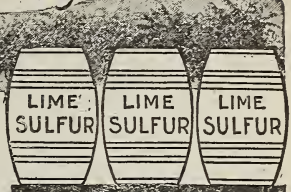
"Scalecide" has greater invigorating effect on your orchard—kills more scale, eggs and larvae of insects with half the labor to apply. We can back up this statement with facts concerning the *Good Results from Using*

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Strawberries and all Small Fruit Plants mean big and *quick* profits for you at small outlay of money.

We are headquarters for Summer and Fall Bearing Strawberry Plants, Raspberries, Blackberries, Gooseberries, Currants, Grapes, Fruit Trees, Roses, Shrubs, Eggs for Hatching, Crates, Baskets, Seed Potatoes, Asparagus, etc. Catalog free.



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A pair of mated **EVERBEARING STRAWBERRY PLANTS** FREE if you will report as to your success with them. Will bear loads of big, red berries from June to November. We have counted 450 berries, blossoms and buds on a single plant. A postal will bring the plants, also enough seed of the new **CERISE FETTERIA** to plant a rod square of ground. Also a pkt. of perennial **ORIENTAL POPPY** seed. Send 10 cts for mailing expense or not, as you please. Write today and get acquainted with **THE GARDNER NURSERY COMPANY** Box 749, Osage, Iowa.



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White Blossoms; the greatest money-making crop of today. Wonderful opportunities for the farmer who starts growing it. Builds up worn land rapidly and produces heavy, money-making crops while doing it. Excellent pasture and hay; inoculates your land for alfalfa. Easy to start; grows on all soils. Our seed all best certified hulled, high-germinating and tested. Quality guaranteed. Write today for our big, Profit-Sharing Seed Guide, circular and free samples. **AMERICAN MUTUAL SEED Co.**, Dept. 968, 43d and Roby St., Chicago, Illinois.

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Best for windbreaks and hedges. Protect crops and stock. Keep house and barn warmer—save fuel—save feed. Hill's evergreens are hardy, nursery-grown. Get Hill's free illustrated evergreen book and list of 50 Great Bargain Offers—from \$4.50 up per Thousand. 56 years' experience. World's largest growers. Write **D. HILL NURSERY Co.**, Evergreen Box 2462, Dundee, Ills. Specialists.



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402,000 in use. Get the whole story told by the Championship Winners in my big free book, "Hatching Facts." With book comes full description of incubator and brooder—my 10-year money-back guaranty—low prices—full particulars—and my \$1300.00 Gold Offers. Learn how I paid one user \$156, another \$50, many from \$45 down. Write me today for Free Book. Jim Rohan, Pres.

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us till you've tried the new **\$10.00 STRANSKY**

We send it on FREE TRIAL with Records. If you buy, pay \$1.00 a week and own a Phonograph for LESS THAN HALF price of equally good machines. Thousands used.


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A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog.


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Latest Book Profitable Poultry

Finest pictures and beautiful color plates. Complete instructions how to breed, hatch, feed by improved methods, describes our busy Poultry Farm with 53 pure-bred varieties, including Runner Ducks. Lowest price list on fowls, eggs, incubators, sprouters, etc. This great 50c book mailed for only 5 cents.

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Free—New 100-page 22nd Annual Edition. Fine pure bred chickens, ducks, geese and turkeys—Northern raised, hardy, beautiful. Fowls, Eggs and Incubators, low prices. America's greatest poultry farm. Write today for Free Book.

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50 Best Paying Varieties

Hardy Northern raised Chickens, Ducks, Geese and Turkeys. Pure-bred heaviest laying strains. Fowls, Eggs, Incubators, all at low prices. Large new Poultry Book and Breeders' Complete Guide Free.

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58 BREEDS

Pure-bred Chickens, Ducks, Geese and Turkeys. Hardy, northern raised, vigorous and most beautiful. Fowls, eggs and incubators at low prices. America's Pioneer Poultry Farm; 21 years exp. Large fine Annual Poultry book and Catalog free.

F. A. NEUBERT, Box 693 Mankato, Minn.

Get FREE Chicken Book



Our big, illustrated, 1916 Year-Book—"Profits in Poultry Keeping"—will help you make more money with fowls. Tells how to raise chicks, get more eggs and make larger profits with less work. Learn about

Cyphers-Built Incubators

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Quality unequalled. Big hatches and a guarantee that protects you; backed by 20 years of leadership. We want you to have a copy of this great Guide for Poultry Raisers. Write for it today—free.

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BIGGEST MONEY-MAKER KNOWN—INVESTIGATE

The greatest forage plant that grows. Superior to all as a fertilizer. Equal to Alfalfa for hay. Excels for pasture. Builds up worn-out soil quickly and produces immense crops, worth from \$50 to \$125 per acre. Easy to start, grows everywhere, on all soils. Don't delay writing for our Big 100-page free catalog and circular giving full particulars. We can save you money on best tested, guaranteed, scarified seed. Sample Free. Write today.

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Plant STRAWBERRIES

We ship plants safely to any part of the United States. Have the VERY BEST for farm or GARDEN CULTURE. Also a complete line of Raspberry, Blackberry, Gooseberry, Currant, Grapes. Acres of Everbearing Strawberry and Raspberry plants, just what you want. Greatest money-maker before the American public. Descriptive catalog free. Write now.

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Cultivate Horseradish.....

Garden, Field, or Farm
Increasing Demand; Large Profits
100 Root Sets, with Full Information, \$1

Write for list of our \$1 Friend Makers, consisting of all kinds of fruit trees, berries, and roses. Money wanted in payment for nursery stock.

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Made \$42.50 in 8 hours

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3 cards a minute, complete—3 size cards. Experience unnecessary. Write for particulars and FREE TRIAL offer now.

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To introduce our wonderful new system of teaching note music by mail, Violin, Guitar, Mandolin, Piano, Organ or Cornet, will give you a dandy instrument absolutely FREE and guarantee to make you a player or no charge; complete outfit FREE. Write at once. Special offer to first pupil. No obligation

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Classified Advertisements

Notices will be inserted in these classified columns for 25 cents per line. Advertisements intended for this department cannot be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

Clover honey of the finest quality in new 60-lb. cans at 9 cts. per lb. J. P. MOORE, Morgan, Ky.

Light amber, of good body and flavor; 120 lbs. in case at 6c; sample 10c. H. C. LEE, Brooksville, Ky.

FOR SALE.—Clover honey of the finest quality in new 60-lb. cans at 9 cts. per lb.
MARTIN CARSMOE, Ruthven, Iowa.

Clover-heartsease-goldenrod blend. Light amber, best quality, prices right. Sample, 10 cts.
E. S. MILLER, Valparaiso, Ind.

FOR SALE.—Choice-grade well-ripened clover honey, good grade for bottling; put up in 60-lb. cans.
GEO. M. SOWARBY, Cato, N. Y.

FOR SALE.—10,000 lbs. white-clover extracted honey in new 60-lb. net tin cans, 2 in a case, for shipment, sample free. Address
D. R. TOWNSEND, Northstar, Mich.

Mesquite and catclaw extracted honey, extra heavy body and exquisite flavor; f. o. b. Cherry Creek, Ariz.; 120 lbs. for \$10.00. Sample, 10 cts. Address BELL APIARIES, Camp Verde, Ariz.

Amber honey, 7 1/4 cts. per lb.; sage honey, 8 1/2; clover honey, 10 cts. per lb. in 60-lb. cans. White comb honey, 12 to 16 cts., box by the case.
I. J. STRINGHAM, 105 Park Place, New York.

Finest clover honey, 8 1/2 cts.; buckwheat, 8, in cases of two 60-lb. cans; 6-lb. can postpaid in second zone, \$1.00. Satisfaction guaranteed.
EARL RULISON, Rt. 1, Amsterdam, N. Y.

Clover, basswood, amber, and buckwheat honey in 60-lb. can and 165-lb. kegs at 7 to 9 cts.; also in 3, 5, and 10 pound friction-top pails. State kind and quantity wanted. C. B. HOWARD, Geneva, N. Y.

Special prices on a quantity of near-water-white white-clover extracted honey in new cans and cases. Money cannot buy better honey than this. A free sample will convince you.
E. D. TOWNSEND, Northstar, Mich.

Fine new-crop clover and basswood honey at 9 cts. in new 60-lb. cans with 3-in. screws. Also in gallons and smaller, for family and store trade. State quantity wanted. C. J. BALDRIDGE, Homestead Farm, Kendaia, N. Y.

FOR SALE.—Car honey, half extra-fine comb, half extracted, alfalfa, or car extracted. Small lots at \$8.00 per case of two 5-gal. cans; cases of 6 10-lb. pails, \$5.00; 12 5-lb. pails, \$5.40; all f. o. b. here.
E. F. ATWATER Co., Meridian, Ida.

FOR SALE.—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-pound cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired, and state quantity you can use. DADANT & SONS, Hamilton, Ill.

FOR SALE.—Amber extracted honey, well-ripened and mild-flavored, 6 cts. Honey-dew honey for baking or bee-food (cheaper than sugar) 5 cts. by the case; ten cases 4 1/2; 25-case lots, 4 cts. per pound; two sixty-pound cans to the case; also have some fall comb honey for \$2.25 to \$2.75 per case of 24 sections.
H. G. QUIRIN, Bellevue, Ohio.

FOR SALE.—Finest quality of white-clover-basswood blend extracted honey in new 60-lb. cans. State how much you can use, and I will quote you price. L. S. GRIGGS, 711 Avon St., Flint, Mich.

RASPBERRY HONEY, all left on the hives until thoroughly ripened. It is thick, rich, and delicious. This honey is put up in new 60-lb. tin cans. We have it in two grades—pure raspberry and raspberry blended with just enough buckwheat honey to color it. Price, the pure raspberry, \$6.00 a can; the raspberry and buckwheat blended, \$5.50 a can. In one-gallon cans by express, raspberry, \$1.50 a can; raspberry and buckwheat blended, \$1.40 a can. Sample of either kind by mail for 10 cts., which may be applied on an order for honey.
ELMER HUTCHINSON, Lake City, Mich.

HONEY AND WAX WANTED

Beeswax bought and sold. STROHMMEYER & ARPE Co., 139 Franklin St., New York City.

WANTED.—White comb honey.
D. H. WELCH, Racine, Wis.

WANTED.—Bulk comb, section, and extracted honey; state price and submit sample.
J. E. HARRIS, Morristown, Tenn.

WANTED.—Your own beeswax worked into "Weed Process" foundation at reasonable prices.
SUPERIOR HONEY Co., Ogden, Utah.
"Everything in bee supplies."

FOR SALE

HONEY LABELS.—All styles. Catalog with prices free.
EASTERN LABEL Co., Clintonville, Ct.

HONEY LABELS.—New designs. Sample free.
LIBERTY PUB. Co., Sta. D, box 4E, Cleveland, Ohio.

FOR SALE.—A full line of Root's goods at Root's prices.
A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Circular-saw mandrels and emery-wheel stands. CHARLES A. HENRY, Eden, N. Y.

FOR SALE.—70 T. tin supers; used one season; bargain if sold at once.
G. LEON ALLEN, Rt. 2, Ulster, Pa.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap.
WHITE MFG. Co., Greenville, Tex.

FOR SALE.—Double-walled two-story beehives with super, metal roofs; bargains at \$1.00 each.
L. F. HOWDEN, Fillmore, N. Y.

SEED CORN.—Highest germination; best varieties other farm seed; 1200 acres; 40-page catalog.
W. N. SCARFF, New Carlisle, Ohio.

Good second-hand 60-pound cans, 25 cts. per case of two cans, f. o. b. Cincinnati. Terms cash.
C. H. W. WEBER & Co., Cincinnati, Ohio.

FOR SALE or on shares, two apiaries in Mississippi. One of the best locations in U. S. for early queens, increase, and honey.
N. GUTE, 2363 Fulton St., Toledo, Ohio.

THE ROOT CANADIAN HOUSE, 185 Wright Ave., Toronto, Ont., successors to the Chas. E. Hopper Co. Full line of Root's goods; also made-in-Canada goods. Extractors and engines; GLEANINGS and other bee-journals; Prairie State incubators. Get the best. Catalog and price list free.

FOR SALE.—Beekeepers' supplies, such as winter cases, hives, sections, covers, bottoms, bodies, supers, brood-frames of every description, shipping-cases, section-holders, comb foundation, smokers, etc. Get my prices before placing your orders.
R. H. SCHMIDT, Rt. 3, Sheboygan, Wis.

PATENTS

PATENTS THAT PAY. \$600,812.00 clients made. Protect your idea! Send date. Advice and wonderful Guide Books free. Highest references. E. E. VROOMAN & Co., 834 F, Washington, D. C.

POULTRY

Poultry Paper, 44 125-page periodical, up to date, tells all you want to know about care and management of poultry for pleasure or profit; four months for 10 cents.

POULTRY ADVOCATE, Dept. 56, Syracuse, N. Y.

\$\$\$\$ IN PIGEONS! Start raising squabs for market or breeding purposes. Make big profits with our Jumbo pigeons. We teach you. Large, free, illustrated, instructive circulars.

PROVIDENCE SQUAB CO., Providence, R. I.

RANCOAS WHITE LEHORN COCKERELS.—Will mate this season only cockerels of better than 200-egg blood. Have for sale heavy utility cockerels, 1915 hatch, Million Egg Farm stock, at two to five dollars each. Write EDGECLIFFE SPECIALTY FARM, Portand, Michigan.

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SOUTHERN LANDS are low in price, but high in productive value, make two to four crops a year, and give largest profits in grain, vegetables, fruits, live stock and dairying. Unsurpassed climate, good markets. Publications on request. M. V. RICHARDS, Commissioner, Room 27, Southern Railway, Washington, D. C.

WANTS AND EXCHANGES

WANTED.—To exchange 3 1/4 x 4 Korona camera for extractor. J. L. SPEER, 6155 Green St., Chicago, Ill.

Will exchange very fine Premo Special camera, 6 1/2 x 8 1/2, with Zeiss anastigmat lens, for extracted clover honey. A. SHIMONEK, Wilber, Neb.

WANTED.—To exchange lath mill and bolter, 24-inch attrition feed-grinder, Economist steam-boiler, 12 H.P., for machinery to make honey-sections or engine lathe. GEO. RALL MFG. CO., Galesville, Wis.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1916. Our catalog and price list will be mailed to you free. Order early and get the discount.

C. E. SHRIVER, Boise, Idaho.

WANTED.—Partner with \$300 to \$500 to expend in bee business. Have 125 dovetailed patent hives; will run 100 to 150 colonies this season; have six-frame automatic reversible extractor, gas engine, saws, cutting, dado heads, etc. Beginner would be apprentice to my years of experience and methods of getting the honey crop. Crop of 1914, 50 colonies, was 3200 lbs. of section honey. Will board party. Partner can have his money back at lapse of two years; will give (he working with me) beginner 1/4 of honey crop or 1-3 if experienced apiary man. Don't waste postage unless you are in earnest; but if wishing to get in and learn a nice good business, write. References given.

JUDSON A. JONES, Continental, Ohio.

MISCELLANEOUS

Choice Santa Clara Valley Dried Fruit from grower to consumer at following prices, f. o. b. Saratoga: Prunes, 10-lb. sack, \$1.10; apricots, 10-lb. sack, \$1.35. Maximum express rate on dried fruit, 4 cts. per pound in U. S. except points served only by Southern Express Co. Mr. E. R. Root has visited our ranch, recommends our product, and vouches for our reliability. HERMAN A. CLARK,

Saratoga, Santa Clara Co., Cal.

BEES AND QUEENS

FOR SALE.—600 colonies well-kept bees. All modern equipment. Write WM. CRAVENS, Rt. 7, San Antonio, Texas.

FOR SALE.—Three-banded Italian queens for season of 1916. Watch for large ad, with prices later. N. FOREHAND, Ft. Deposit, Ala.

FOR SALE.—50 colonies of bees in good 8-frame standard hives, in good condition, at \$3 per colony. MRS. L. H. HUFFMAN, Rt. 3, Nashua, Iowa.

FOR SALE, or will take partner that is willing to go half, 120 colonies Italian bees, house, tools, empty hives, 160 acres land, homesteading, well, \$1000 or go half. J. C. HICKSON, Bisby, Ariz.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1; 6 for \$5. WM. S. BARNETT, Barnetts, Va.

FOR SALE.—Three-banded Italian queens. Nuclei a specialty. My stock will please you as it has others. Let me book your order for spring delivery. Write for circular and price list.

J. L. LEATH, Corinth, Miss.

Golden Italian queens that produce golden bees; the brightest kind, gentle, and as good honey-gatherers as can be found; each, \$1.00; 6, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00.

J. B. BROCKWELL, Barnetts, Va.

FOR SALE.—Italian bees, 1 lb. with queen, \$2.25; 1 frame with queen, \$2.00. Queens, 75 cts. each. Safe delivery guaranteed; 30-page catalog with beginners' outfit for stamp. THE DERBY TAYLOR CO., Newark, N. Y. (formerly LYONS).

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SON, Wilcox St., Binghamton, N. Y.

FOR SALE CHEAP.—80 colonies of Italian bees in DeLand, Fla. Moore stock, 8 and 10 fr. hives; 42 empty supers, full depth; 60 shallow ext. supers; wax-press, extractor, uncapping-tank, smokers, knives, foundation, shipping-cases, etc., for \$300 cash. A rare bargain. Speak quick. Address 38392 "A BEEKEEPER," care of GLEANINGS, Medina, Ohio.

FOR SALE.—400 colonies Moore strain bees in good location. Combs built on full sheets of foundation. Everything in first-class shape. Principal source of honey is alfalfa. Located in the Rio Grande Valley, under the largest irrigation project in the United States. THE CROWN APIARIES, Mesilla Park, N. M.

QUEENS.—Italians exclusively; golden or leather-colored. One select untested, \$1.00; 6, \$4.25; 12, \$8.00. Tested, \$1.25. Best breeder, \$5.00. Early swarms of young bees in light screen cage a specialty. One 1-lb. package, \$1.25; one 2-lb., \$2.25; queen extra. For ten or more, write for price. Also nuclei and full colonies. I am booking orders now, with 10 per cent deposit for delivery March 15 and after. Safe arrival, prompt service, and satisfaction I guarantee. Circular free.

J. E. WING, 155 Schiele Ave., San Jose, Cal.

M. C. Berry & Co., Successors to Brown & Berry, are booking orders for spring delivery. This firm is the largest and most successful shipper of Select Bred Three-banded Italian queens and bees in packages in the South. Write for circular and price list.
M. C. BERRY & Co., Hayneville, Ala.

FOR SALE.—1-lb. swarm (shipping weight 3 lbs.) Italian bees, \$1.50, without queen, March 20 or later. Untested Italian queen, 75 cts. after April 10; tested Italian queen \$1.25 after March 20. No reduction for less than 50. 1 to 49 2-lb. bees in package, no queen, \$2.50 each; 50 to 500 2-lb. bees in packages, no queen, \$2.37. Bred from best honey-gatherers; no disease. Safe arrival and satisfaction guaranteed. We are now booking orders with ¼ payment, balance before shipment. "The early swarms get the honey." We can care for your wants for 1916. W. D. ACHORD, successful package shipper and queen-breeder, Fitzpatrick, Ala., U. S. A.

HELP WANTED

WANTED.—Two men to work with bees the coming season; little experience necessary; full particulars by first letter. B. B. COGSHALL, Groton, N. Y.

WANTED.—Young man to work with bees season of 1916. No tobacco-user need apply; or will sell half interest to right party with small payment down. M. C. SILSBEE, Rt. 3, Cohocton, N. Y.

WANTED.—Energetic young man (preferably married) who has had experience with bees, and understands queen-rearing, to take charge of apiary of 200 colonies with opportunity to increase to 400. Steady employment on ranch when bees do not require attention; must have farm experience. Salary and percentage of honey. F. L. HOGUE, Lompoc, Cal.

WANTED.—For large and growing business, farm-raised man of good habits, experienced in extracted honey production, and willing to help at light farming when not busy with apicultural work. Good permanent position for right party. One acquainted with autos preferred. Particulars on application. Address 36602 "OUTYARDS," Gleanings in Bee Culture, Medina, Ohio.

WANTED.—Boy or young man who has had some experience with bees to work as helper with bees when needed, but most of the time to work in green-houses and gardens of a large company. Excellent opportunity for bright active boy of good character who wants chance to learn and work up. Permanent position if satisfactory. Boy from small town or country preferred. State age and experience.

W. B. DAVIS CO., Aurora, Ill.

SITUATIONS WANTED

Married man, age 37, wants position as apiarist; has handled bees since childhood. Understands either comb or extracted production, and queen-rearing in full colony.

J. C. ADAMS, 20th and Rose, Detroit, Mich.

Experienced queen-breeder wants work for the season of 1916 with some reliable firm. Prefer raising queens for the market, but will also handle colonies for honey production. Best of references furnished. State wages and full particulars when writing.

N. C. JENSEN, Albion, Neb.

BEEKEEPERS' DIRECTORY

Well-bred bees and queens. Hives and supplies.
J. H. M. COOK, 70 Cortlandt St., New York.

Nutmeg Italian queens, leather color, \$1.00; 12 for \$10.00 return mail.

A. W. YATES, 3 Chapman St., Hartford, Ct.

QUIRIN's superior northern-bred Italian bees and queens are hardy, and will please you. More than twenty years a breeder. Orders booked now. Free circular.
H. G. QUIRIN, Bellevue, Ohio.

QUEENS.—Imported, three-banded Italian bred for business, June 1 to Nov. 15, untested queens, 75 cts. each; dozen, \$8.00; select, \$1.00 each; dozen, \$10.00; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Boyd, Ky.

Convention Notices

The Washington State Beekeepers' Association will hold its 22d annual convention on Feb. 9, 10, 1916, in the court-house, North Yakima. We are looking forward to having a good time. It is one month later than usual, owing to an unavoidable delay.
J. B. RAMAGE, Pres.

North Yakima, Wash., Dec. 30.

MASSACHUSETTS CONVENTION.

The annual Massachusetts convention of beekeepers for 1916 will be held at Amherst, Mass., March 14 to 16, inclusive. This will form the conclusion of the winter school of beekeeping, but the program of the convention is not fully planned. A number of prominent authorities will appear upon the program.

SHORT COURSE FOR MICHIGAN BEEKEEPERS.

The Michigan Agricultural College, East Lansing, Michigan, announces a "Beekeeper's Week," March 13 to 18 inclusive. It is hoped that a large number of beekeepers will take advantage of this new course, so that it may become a regular feature. There are no fees, and no age limit. Women are as welcome as the men. All beekeepers desiring to obtain more knowledge of beekeeping should apply to the Department of Entomology, East Lansing, Michigan, for further particulars and program.

APICULTURE GIVEN AT THE MICHIGAN AGRICULTURAL COLLEGE.

1. A five-credit course, two lectures and one lab., elective to seniors only, with prerequisite entomology. Given during the fall term. Practice and theory.
2. Two lectures a week, for eight weeks, given to the Horticultural short-course students in January and February.
3. Two periods a day, lectures and practical, during the month of February, given to the Agricultural short-course students.
4. Three lectures a day during "Round-up Week," Feb. 27, to March 4. These will be more general, and suitable for the farmer who has a few colonies, and wishes to care for them properly.
5. A one-week course in beekeeping, given during the third week in March, known as "Beekeepers' Week." Outside speakers will address the students in this course, and it will be made as complete as possible in the time allowed. March 13 to 18, 1916.
6. A long course for the students of the senior years is being considered, and announcements may be made later.

F. ERIC MILLEN, Instructor in Beekeeping and State Inspector of Apiaries.

ON THE BOOKSHELF

Happy Hollow Farm

Unless one is prepared to become enthusiastic about farming perhaps he had better let alone "Happy Hollow Farm," by William R. Lighton. Mr. Lighton is the author of "Letters of an Old Farmer to His Son," which was reviewed recently in these col-

umns. He was formerly an Omaha newspaper man, and went into the farming business down among the Ozarks in Arkansas. This is the story of his experience.

The fact that the author was a writer by profession made the telling of the story easy, but he could never have imagined the buoyant enthusiasm that comes from a life earned from the soil. It is not a manual of farming, yet a book of vast practical usefulness, common sense, and advice, and delightful gaiety.

The man who hopes some day to own a farm of his own will read it, of course. The man who already owns a farm will see new joy in his work, and will more greatly appreciate his own usefulness by living over again with Mr. Lighton his adventures in freedom.

"Happy Hollow Farm," William R. Lighton, The George H. Doran Co., New York; 318 pages, 12 illustrations, \$1.25 net.



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A MAN tried to sell me a horse once. He said it was a fine horse and had nothing the matter with it. I wanted a fine horse. But I didn't know anything about horses much. And I didn't know the man very well either.

So I told him I wanted to try the horse for a month. He said, "All right, but pay me first, and I'll give you back your money if the horse isn't all right."

Well, I didn't like that. I was afraid the horse wasn't "all right," and that I might have to whistle for my money if I once parted with it. So I didn't buy the horse, altho I wanted it badly. Now this set me thinking.

You see I make Washing Machines—the "100 Gravity" Washer.

And I said to myself, lots of people may think about my Washing Machine as I thought about the horse, and about the man who owned it.

But I'll never know, because they wouldn't write and tell me. You see I sell my Washing Machines by mail. I have sold over half a million that way.

So, thought I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them, just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tubful of very dirty clothes in Six Minutes. I know no other machine ever invented can do that, without wearing out the clothes.

Our "1909 Gravity" Washer does the work so easy that a child can run it almost as well as a strong woman, and it doesn't wear the clothes, fray the edges, nor break buttons the way all other machines do.

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